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Introduction

This *Index to NASA Tech Briefs* has been prepared as a guide to technological innovations derived from the NASA space program. The publication is arranged in two major sections: the first contains a listing of the citations and abstracts of all NASA Tech Briefs published since January 1, 1965, arranged by subject category for ease of scanning; the second comprises three indexes: Subject Index, Originator/Tech Brief Number Index and Tech Brief/Organator Number Index. Each Tech Brief citation is prefixed by a Tech Brief number. The separate indexes contain explanatory notes which guide the user to the desired Tech Brief.

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01 ELECTRICAL (ELECTRONIC)

B65-10001
CIRCUIT CONVERTS AM SIGNALS TO FM FOR MAGNETIC RECORDING
INNOVATOR NOT GIVEN /RCA/ JAN. 1965
GSFC-227
Convert AM signals to FM for magnetic recording by relaxation-type voltage-controlled oscillator /VCO/. This circuit may be used in radar, telemetry, and test equipment.

B65-10002
TUNNEL-DIODE CIRCUIT FEATURES ZERO-LEVEL CLIPPING
BUSH, E. G. JAN. 1965
GSFC-241
Tunnel-diode circuit starts clipping action as input voltage crosses zero axis. This clipper circuit is effective as limiter in FM receiver.

B65-10005
COMPUTER MODIFICATION REDUCES TIME OF PERFORMING ITERATIVE DIVISION
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
M-FS-166
Time reduction in performing iterative division results from using a serial-by-parallel divider employing a look-ahead feature that predetermines the sign relationships of several iterations before the computer cycle begins. This method can be employed in any data handling system performing high-speed division.

B65-10006
MODIFICATION INCREASES LIGHT OUTPUT OF INJECTION-LUMINESCENT DIODES
INNOVATOR NOT GIVEN /RCA/ JAN. 1965 SEE ALSO B64-10283
M-FS-192
Removing a section of the electrode area from the N-face of injection-luminescent diodes for pumping lasers substantially increases light output. Light is emitted from the N-face as well as from the four edges of the diode.

B65-10010
INEXPENSIVE, STABLE CIRCUIT MEASURES HEART RATE
VICK, H. A. JAN. 1965
MSC-95
Inexpensive transistorized circuit provides reliable analog indications of heart rate in response to preamplified electrocardiograph signal applied to its input.

B65-10011
CIRCUIT IMPROVEMENT PRODUCES MONOSTABLE MULTIVIBRATOR WITH LOAD-CARRYING CAPABILITY
GOLDMAN, N. E. SCHAFFERT, J. C. JAN. 1965
GSFC-34A
Improved circuit provides greater reliability and load-carrying capabilities for monostable multivibrator.

B65-10012
HELICAL COAXIAL-RESONATOR MAKES EXCELLENT RF FILTER
INNOVATOR NOT GIVEN /RCA/ JAN. 1965
GSFC-243

Isolation of closely spaced transmitting and receiving frequencies of an antenna without insertion loss by filtering the receiver input is accomplished by an inner conductor with two winding helices and an outer conductor of aluminum. A tuning slug is at either end of the inner conductor form.

B65-10013
ZENER DIODE FUNCTION GENERATOR REQUIRES NO EXTERNAL REFERENCE VOLTAGE
BOLTE, G. BURNS, R. JAN. 1965
JPL-33
Function generator utilizing parallel impedance networks with zener diodes produces functions

which are discontinuous in slope. The function generated appears at the output of the parallel network in the form of a voltage varying in time.

B65-10018
CARBON ARC IGNITION IMPROVED BY SIMPLE AUXILIARY CIRCUIT
INNOVATOR NOT GIVEN /RCA/ JAN. 1965
MSC-103
High voltage, low current pulse in series with arc power supply efficiently ignites a carbon arc. The easily and economically produced circuit is useful with arc burners and searchlights and with plasma jets.

B65-10023
MINIATURE STRESS TRANSDUCER HAS DIRECTIONAL CAPABILITY
SAN MIGUEL, A. SILVER, R. H. JAN. 1965
JPL-591
Miniature stress transducer uses a semi-conductive piezoresistive element to detect stress only on specific axes. Measurement of internal mass stress is based on the compressive deformation of the transducer. The device is applicable to constant stress monitoring in building and dam structural parts.

B65-10025
LOGIC REDUNDANCY IMPROVES DIGITAL SYSTEM RELIABILITY
INNOVATOR NOT GIVEN /STANFORD RES. INST./ FEB. 1965
JPL-SC-069
Redundant-channel system automatically corrects any single error in a set of three binary signal channels. This system is especially applicable to digital computers where data is transmitted in parallel channels.

B65-10026
STEPPING MOTOR DRIVE CIRCUIT DESIGNED FOR LOW POWER DRAIN
INNOVATOR NOT GIVEN /HARVARD COLL./ FEB. 1965
GSFC-198
High power drain is eliminated by a circuit consisting of a divide-by-two stage, two identical inputs, a wiggle amplifier, driver, and power output stages to drive the step motor.

B65-10028
TRANSISTOR VOLTAGE COMPARATOR PERFORMS OWN SENSING
CLIFF, R. A. FEB. 1965
GSFC-228
Detection of the highest voltage input among a group of varying voltage inputs is accomplished by a transistorized voltage comparison circuit. The collector circuits of the transistors perform the sensing function. Input voltage levels are governed by the transistors.

B65-10030
LIBRARY OF DOCUMENTS COMPRESSED INTO LAP-HELD DISPLAY KIT
INNOVATOR NOT GIVEN /NATL. CASH REGISTER CO./ FEB. 1965
MSC-125
A lightweight Apollo flight kit containing microfilmed data is packaged in a hinged box with a viewing screen cover, and a writing surface. It is secured to the users lap.

B65-10033
PHOTOELECTRIC SEMICONDUCTOR SWITCH OPERATES WITH LOW LEVEL INPUTS
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
JPL-SC-068
Photoelectric semiconductor switch with a buried emitter region avoids high-leakage currents across the emitter. It exhibits high emitter-to-collector transport efficiency beta at low signal levels.

B65-10041
PULSE HEIGHT ANALYZER OPERATES AT HIGH REPETITION RATES, LOW POWER
INNOVATOR NOT GIVEN /SPACE TECHNOL. LABS., INC./ FEB. 1965

W00-046

Simple multistage transistor gating circuit provides a pulse height analyzer that operates at high repetition rates and low power. The circuit compares the input pulse heights to discrete reference voltages.

B65-10045

THERMISTOR CONNECTOR ASSEMBLY INCREASES ACCURACY OF MEASUREMENTS
INNOVATOR NOT GIVEN /ATLANTIC RES. CORP./ FEB. 1965
LANGLEY-62

Isolation of the thermistor from spurious heat transfer for accurately measuring ambient air temperatures is accomplished by a mounting consisting of a transparent plastic film bonded to a U-shaped phenolic board with depositions of aluminum on each face and upper edge, and a variable capacitor for fine tuning.

B65-10047

CIRCUIT DETECTS ERRORS IN ADDRESS CURRENTS FOR MAGNETIC CORE ARRAYS
INNOVATOR NOT GIVEN /IBM/ FEB. 1965
M-FS-234

Address current error detector generates a signal whenever any error producing conditions arise in magnetic core arrays. Can be used with test equipment and memory storage units.

B65-10048

MICROPARTICLE IMPACT SENSOR MEASURES ENERGY DIRECTLY
ALEXANDER, W. M. BERG, O. E. FEB. 1965
GSFC-252

Construction of a capacitor sensor consisting of a dielectric layer between two conductive surface layers and connected across a potential source through a sensing resistor permits measurement of energy of impinging particles without degradation of sensitivity. A measurable response is produced without penetration of the dielectric layer.

B65-10050

NULLING PYROMETER USES KERR CELL SHUTTER FOR FAST RESPONSE
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965
NU-0010

Conventional pyrometer, in which Kerr cell replaces mechanical shutter and polarizers are added to filters, yields rapid shutter response.

B65-10051

METAL SHEATH IMPROVES THERMOCOUPLE USING GRAPHITE IN ONE LEG
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965
NU-0011

Thermocouple using graphite in one leg is sealed in a moistureproof metal sheath which permits high EMF output and good mechanical strength.

B65-10052

ZENER DIODE IS STARTER FOR TRANSISTOR-REGULATED POWER SUPPLY
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965
NU-0015

Zener diode in parallel with a silicon transistor supplies the starting current for a transistor-regulated power supply.

B65-10054

PULSE GENERATOR PERMITS NONDESTRUCTIVE TESTING OF COMPONENT BREAKDOWN VOLTAGE
INNOVATOR NOT GIVEN /HONEYWELL/ MAR. 1965
MSC-122

Nondestructive testing of the breakdown voltage of transistors and other electronic components is achieved by a simple relay circuit. The circuit operates by applying low-energy, high-voltage microsecond pulses to the components under test.

B65-10055

FM OSCILLATOR USES TETRODE TRANSISTOR
BOENSEL, D. W. MAR. 1965
JPL-82

Tetrode-driven crystal oscillator achieves large frequency variations for a given input signal. Frequency control is obtained by variation of the second base current of the tetrode.

B65-10056

VIBRATING-MEMBRANE ELECTROMETER HAS HIGH CONVERSION GAIN
COON, G. W. DIMEFF, J. APR. 1965
ARC-38

Vibrating-membrane transducer in a circuit can measure current below 10 to-the-minus 17 ampere. This electrometer has a high conversion gain and a minimum internal power consumption.

B65-10057

FEED-THROUGH HAS POLYTERMINAL FEATURE
SANDERS, L. H. MAR. 1965
M-FS-25

Feed-through connector with individual solder pots in the polyterminal side provides good connections with small amounts of solder and permits visual inspection of bonds. Poly-terminal also provides a friction mechanical bond to position conductors prior to soldering.

B65-10059

METAL DIAPHRAGM USED TO CALIBRATE MINIATURE TRANSDUCERS
INNOVATOR NOT GIVEN /ASTRO-SPACE LABS./ MAR. 1965
M-FS-207

Dynamic comparative calibration system measures response of miniature pressure transducers. The system is composed of an electromechanically-driven metal diaphragm, a calibrated and an uncalibrated transducer and an oscillator.

B65-10061

SIMPLE CONTROL DEVICE SENSES SOLAR POSITION
LONBORG, J. O. RANDALL, J. C. MAR. 1965
JPL-638

The amount of solar radiation incident on a specially prepared bimetallic strip is simply and reliably controlled by a light valve. This device is valuable for systems requiring temperature regulation.

B65-10062

PULSED PLASMA ACCELERATOR OPERATES REPETITIVELY WITHOUT COMPLEX CONTROLS
SABOL, A. P. MAR. 1965
LANGLEY-48

Self-repeating pulsed plasma accelerator operates with a wide variety of gases over a large range of pressures without complex control equipment. The accelerator combines a circular channel with a tangential channel at the entrance way of a high-velocity gas.

B65-10066

FUEL CELL SERVES AS OXYGEN LEVEL DETECTOR
INNOVATOR NOT GIVEN /GE/ MAR. 1965
JPL-SC-072

Monitoring the oxygen level in the air is accomplished by a fuel cell detector whose voltage output is proportional to the partial pressure of oxygen in the sampled gas. The relationship between output voltage and partial pressure of oxygen can be calibrated.

B65-10067

SENSITIVE LEVEL SENSOR MADE WITH SPIRIT LEVEL, GIVES ELECTRICAL OUTPUT
BRYANT, E. L. MAR. 1965
LANGLEY-49

Sensor incorporating a circular spirit level, electrical lamp and two pairs of photocells, provides an electrical indication of flat surface level deviation.

B65-10068

AUTOMATIC THERMAL SWITCH ACCELERATES COOLING-DOWN OF CRYOGENIC SYSTEM
WIEBE, E. R. MAR. 1965
JPL-655

Automatic switch uses short stainless steel tube with copper heat sinks to accelerate helium gas cooling and provides good thermal conductivity and good thermal insulation.

B65-10069

FEEDBACK OSCILLATOR FUNCTIONS AS LOW-LEVEL
PULSE STRETCHER

INNOVATOR NOT GIVEN /SPERRY RAND CORP./ MAR. 1965
GSFC-261

Low trigger pulses of the pulse stretcher circuit are obtained by forward biasing the transistor oscillator. The loop gain is kept below unity and prevents free-running oscillation. Two parallel feedback loops improve the stretching capabilities.

B65-10072

SYNCHRONIZED PULSE GENERATOR NEEDS NO EXTERNAL
POWER

CANCRO, C. A. JANNICHE, P. J., JR. MAR. 1965
GSFC-274

Simple circuit with high input and low output impedance generates a fast rise-time pulse synchronized with an input pulse of slower rise and fall times. Circuit requires no external power.

B65-10073

SYSTEM MEASURES ANGULAR DISPLACEMENT WITHOUT
CONTACT

DAVIS, W. T. MAR. 1965
LANGLEY-46

Optic system coupled to an electronic detection and measuring system converts angular movement of reflected light to a direct readout, without any direct contact with the object.

B65-10076

LIGHT-SENSITIVE POTENTIOMETER MEASURES
PRODUCT OF TWO VARIABLES

HAERTSCH, O. C. MAR. 1965
GSFC-240

The output voltage from a photoconductive potentiometer circuit using a galvanometer mirror reflecting the light beam is directly proportional to the product of the input voltage.

B65-10079

PHOTOELECTRIC SENSOR OUTPUT CONTROLLED BY
EYEBALL MOVEMENTS

INNOVATOR NOT GIVEN /SPACO/ MAR. 1965
M-FS-274

The difference between the infrared absorption of the iris and infrared reflectivity of the eyeball controls the operation of a device consisting of an infrared source and amplifier, a cadmium selenide infrared sensor, and an infrared filter.

B65-10080

PHASE DETECTOR CIRCUIT SYNTHESIZES OWN
REFERENCE SIGNAL

INNOVATOR NOT GIVEN /FAIRCHILD STRATOS CORP./
MAR. 1965
M-FS-247

Circuit with isolation amplifier connected to a frequency multiplier and synchronous phase detector synthesizes the phase reference signal from the phase modulated input signal.

B65-10085

TRANSDUCER SENSES DISPLACEMENTS OF PANELS
SUBJECTED TO VIBRATION

PEA, R. O. MAR. 1965
ARC-37

Inductive vibration sensor measures the surface displacement of nonferrous metal panels subjected to vibration or flutter. This transducer does not make any physical contact with the test panel when measuring.

B65-10086

SYSTEM SELECTS FRAMING RATE FOR SPECTROGRAPH
CAMERA

INNOVATOR NOT GIVEN /AM. OPT. CO./ MAR. 1965
LANGLEY-55

Circuit using zero-order light is reflected to a photomultiplier in the spectrograph monitors incoming radiation to provide an error signal which controls the advancing and driving rate of the film through the camera.

B65-10087

APPARATUS MEASURES SWELLING OF MEMBRANES IN

ELECTROCHEMICAL CELLS

HENNIGAN, T. J. APR. 1965
GSFC-280

Apparatus consisting of a pressure plate unit, four springs of known spring constant and a micrometer measures the swelling and force exerted by the polymer membranes of alkaline electrochemical cells.

B65-10089

TRANSDUCER MEASURES TEMPERATURE DIFFERENTIALS
IN PRESENCE OF STRONG ELECTROMAGNETIC FIELDS

APR. 1965
ARC-27

Measurement of temperature rise of cooling water under pressure and in strong electromagnetic fields is accomplished by a transducer using a magnetically shielded thermocouple arrangement. The thermocouple junctions are immersed in oil to isolate them from electric currents in the water.

B65-10091

SIMULATOR PRODUCES PHYSIOLOGICAL WAVEFORMS
EKEROOT, S. MAR. 1965

MSC-94

Physiological waveform simulator capable of producing signals to simulate an axillary and a sternal electrocardiogram, blood pressure, respiratory rate and body temperature. This may be used to check out bioinstrumentation.

B65-10093

COMPUTER PROGRAMS SIMPLIFY OPTICAL SYSTEM
ANALYSIS

INNOVATOR NOT GIVEN /HONEYWELL/ APR. 1965
GSFC-306

The optical ray-trace computer program performs geometrical ray tracing. The energy-trace program calculates the relative monochromatic flux density on a specific target area. This program uses the ray-trace program as a subroutine to generate a representation of the optical system.

B65-10096

DIGITAL SYSTEM ACCURATELY CONTROLS VELOCITY
OF ELECTROMECHANICAL DRIVE

NICHOLS, G. B. APR. 1965
GSFC-287

Digital circuit accurately regulates electromechanical drive mechanism velocity. The gain and phase characteristics of digital circuits are relatively unimportant. Control accuracy depends only on the stability of the input signal frequency.

B65-10097

VARIABLE VOLTAGE SUPPLY USES ZENER DIODE AS
REFERENCE

KLEINBERG, L. L. LAVIGNE, R. C. APR. 1965
GSFC-262

Using a zener diode as the reference element, a simple transistorized circuit provides a stable variable reference voltage.

B65-10102

SIMPLE CIRCUIT FUNCTIONS AS FREQUENCY
DISCRIMINATOR FOR PFM SIGNALS

BILLINGSLEY, J. APR. 1965
GSFC-267

Simple circuit monitors the frequency of PFM /pulse frequency modulated/ telemetry signals. This discriminator can be used as a constant current integrator in such circuits as linear sweep and time delay.

B65-10103

IMPROVED MAGNETOMETER USES TOROIDAL GATING
COIL

INNOVATOR NOT GIVEN /CORNELL UNIV./ APR. 1965
GSFC-249

Improved magnetometer employs a cylindrical, high permeability magnetic core with a toroidal gating coil and a solenoid pickup coil. Flux interaction can be reduced by electrostatically shielding the pickup coil from the gating coil. The magnetometer principle can be applied to navigation devices.

B65-10105

B65-10105

VARIABLE LOAD AUTOMATICALLY TESTS DC POWER
SUPPLIES

BURKE, H. C., JR. SULLIVAN, R. M. APR. 1965
GSFC-291

Continuously variable load automatically tests dc power supplies over an extended current range. External meters monitor current and voltage, and multipliers at the outputs facilitate plotting the power curve of the unit.

B65-10108

MAGNETIC FIELD CONTROLS CARBON ARC TAIL FLAME
INNOVATOR NOT GIVEN /RCA/ APR. 1965

MSC-139

Polarity of two electromagnets placed near the exhaust flue cancels out a high carbon-arc field. The arc tail flame is correctly drawn to the exhaust flue and contamination is diverted. This device should reduce maintenance cycles on any arc-powered illuminator.

B65-10112

UNIUNCTION FREQUENCY DIVIDER IS FREE OF
BACKWARD LOADING

FAIRBANKS, A. F. APR. 1965

JPL-WOO-010

Simple frequency divider composed of relaxation oscillators uses unijunction transistors to reduce backward loading to a minimum. This circuit design is applicable in timing devices and sync generators for television systems.

B65-10118

TRANSISTORIZED CIRCUIT CLAMPS VOLTAGE WITH
0.1 PERCENT ERROR

INNOVATOR NOT GIVEN /RCA/ APR. 1965

GSFC-196

Transistorized clamping circuit clamps either of two voltage levels to input of digital-to-analog resistive matrix with 0.1 percent error. Clamping circuit technique has analog, digital, and hybrid circuit applications.

B65-10119

VARIABLE FREQUENCY TRANSISTOR INVERTERS USE
MULTIPLE CORE TRANSFORMERS

INNOVATOR NOT GIVEN /DUKE UNIV./ APR. 1965

GSFC-183

Magnetic-coupled multivibrators containing two or more square-loop cores with multiple windings in a single transformer package, provide indirect frequency control and improved operational characteristics. This multivibrator can be used for power oscillators, nonlinear magnetic circuitry and telemetry circuits.

B65-10120

MULTIPLE TEST TUBES STIRRED MECHANICALLY
LEON, H. J. STRONG, I. J. APR. 1965

ARC-42

Mechanical device simultaneously stirs multiple test tubes under controlled laboratory conditions. The invention provides a variable stirring rate, minimal amount of contamination of tube contents, unattended and simple operation, and easy maintenance and cleaning.

B65-10123

EFFICIENT THIN FILM HEATING ELEMENT TAKES
MINIMUM SPACE

BUSCH, A. H. APR. 1965

GSFC-289

Light, thin-film heating element is formed by vacuum deposition of metal onto a nonconductive surface to be heated. This small-sized heater has a very fast response time.

B65-10124

VARIABLE FREQUENCY MAGNETIC MULTIVIBRATOR
GENERATES STABLE SQUARE-WAVE OUTPUT

PAULL, S. MAY 1965

GSFC-AE-21

Variable frequency magnetic multivibrator operates in a full wave fashion to provide a stable square wave output over wide variations in temperature and power supply potential. This invention is applicable in clocks and control devices.

B65-10125

SIMPLIFIED ELECTROMETER HAS EXCELLENT

OPERATING CHARACTERISTICS

BRANTNER, R. E. MAY 1965

JPL-413

Simplified and improved electrometer circuit provides high-input impedance, stability of gain and operating point, linear response, and low power requirements.

B65-10127

TRAVELING-WAVE TUBE CIRCUIT SIMPLIFIES
MICROWAVE RELAY

ALLEN, W. K. IPPOLITO, L. J. NACE, D. A. MAY 1965

GSFC-299

Circuit with a sawtooth-modulated traveling-wave tube, which acts as a frequency converter and as an amplifier, simplifies microwave transmission. Lower power losses and reduced size and weight are also realized in this circuit.

B65-10128

PIEZORESISTIVE GAGE TESTS PIN-CONNECTOR
SOCKETS

BOND, W. W. MAY 1965

JPL-675

Connector pin consisting of a piezoresistive crystal, retainer spring and a bridge circuit with voltmeter is used to test connector sockets and may be adapted for multiple socket testing.

B65-10137

INSTRUMENT CALIBRATES LOW GAS-RATE FLOWMETERS
COPELAND, A. C. FULTON, W. C. SMITHER, M. A.

MAY 1965

MSC-134

Electronically measuring the transit time of a soap bubble carried by the gas stream between two fixed points in a burette calibrates flowmeters used for measuring low gas-flow rates.

B65-10138

HIGH-GAIN AMPLIFIER HAS EXCELLENT STABILITY
AND LOW POWER CONSUMPTION

KLEINBERG, L. L. MAY 1965

GSFC-272

Transistorized amplifier, in which an external reference voltage controls gain, combines high gain with stability and low power consumption. This circuit is useful in electronic servo and portable audio equipment.

B65-10139

SPHERICAL ELECTRODE ELIMINATES HIGH-VOLTAGE
BREAKDOWN

FINKE, R. C. VETRONE, R. H. MAY 1965

LEWIS-155

Spherical electrodes surrounding electrode-dielectric junctions eliminate high-voltage breakdown. The gap between the spherical electrode and the dielectric must be of an optimum size for proper operation. Modified, this electrode should be suitable as a high-voltage feedthrough between various liquid and gaseous media.

B65-10142

AUXILIARY CIRCUIT ENABLES AUTOMATIC MONITORING
OF EKG'S

INNOVATOR NOT GIVEN /TEX. INST. FOR

REHABILITATION AND RES./ MAY 1965 SEE ALSO

B65-10143 AND B65-10010

MSC-106

Auxiliary circuits allow direct, automatic monitoring of electrocardiograms by digital computers. One noiseless square-wave output signal for each trigger pulse from an electrocardiogram preamplifier is produced. The circuit also permits automatic processing of cardiovascular data from analog tapes.

B65-10143

DIGITAL-OUTPUT CARDIOTACHOMETER MEASURES RAPID
CHANGES IN HEARTBEAT RATE

VICK, H. MAY 1965 SEE ALSO B65-10010 AND

B65-10142

MSC-133

Cardiotachometer circuits produce an output voltage proportional to the heartbeat rate on a beat-by-beat basis. This is less complex and less

costly than the digital cardiometers.

B65-10145
LOGARITHMIC AMPLIFIER USES FIELD EFFECT
TRANSISTORS
STEWART, J. L. MAY 1965
JPL-509

Solid-state amplifier utilizes field effect transistors and planar junction diodes to provide a logarithmic response to a wide range of input signals.

B65-10146
FREQUENCY OFFSET IN LINEAR FM/CW TRANSPONDER
ELIMINATES CLUTTER
INNOVATOR NOT GIVEN /MELPAR/ MAY 1965
M-FS-249

Clutter is eliminated by offsetting the frequency of a transponder signal with respect to an interrogation signal. This improves the tracking of aircraft and spacecraft by FM/CW transponders.

B65-10151
ROTOR POSITION SENSOR SWITCHES CURRENTS IN
BRUSHLESS DC MOTORS
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
MAY 1965
GSFC-315

Reluctance switch incorporated in an induction motor is used for sensing rotor position and switching armature circuits in a brushless dc motor. This device drives the solar array system of an unmanned space satellite.

B65-10152
CIRCUIT REDUCES DISTORTION OF FM MODULATOR
INNOVATOR NOT GIVEN /RCA/ MAY 1965
GSFC-257

Correction circuit improves the linearity of a voltage-variable capacitor used to modulate a free-running oscillator. This improvement only applies to audio frequency modulation and will not correct for slowly varying dc input in some telemetry systems.

B65-10158
LASER BEAM TRANSMITS ELECTRIC POWER
INNOVATOR NOT GIVEN /RCA/ JUN. 1965
GSFC-293

Semiconductor laser beam supplies sustained level of electrical power to remote location not served by conventional conductors. This system would be useful where transmission of energy is critical, such as in nuclear reactors, or other hazardous environments.

B65-10159
SOLID-STATE SWITCHING USED TO SPEED UP
CAPACITIVE INTEGRATOR
NEWCOMB, A. L., JR. JUN. 1965
LANGLEY-104

Capacitive integrator circuit using silicon controlled switches /SCS/ insures output voltage linearly proportional to input pulse width. This circuit provides high input impedance and relatively low output impedance.

B65-10161
INTERFEROMETER COMBINES LASER LIGHT SOURCE
AND DIGITAL COUNTING SYSTEM
INNOVATOR NOT GIVEN /MIT/ JUN. 1965
MSC-151

Measurement of small linear displacements in digital readouts with extreme accuracy and sensitivity is achieved by an interferometer. The instrument combines a digital electro-optical fringe-counting system and a laser light source.

B65-10165
SUPERCONDUCTOR MAGNETS USED FOR STAGGER-TUNING
TRAVELING-WAVE MASER
INNOVATOR NOT GIVEN /RCA/ JUN. 1965
GSFC-292

Superconducting materials reduce size and weight of magnets used for stagger-tuning individual traveling-wave maser crystals. The invention is useful in microwave communication systems requiring a high information rate.

B65-10169
PHASE SHIFT FREQUENCY SYNTHESIZER IS
EFFICIENT, SMALL IN SIZE
INNOVATOR NOT GIVEN /SPACE TECH. LABS./ JUN.
1965
M-FS-250

Phase shift frequency synthesizer produces suppressed-carrier signals at the sum and difference frequencies. All unwanted frequencies are suppressed by this small-sized synthesizer.

B65-10178
DC TO AC CONVERTER OPERATES EFFICIENTLY AT
LOW INPUT VOLTAGES
INNOVATOR NOT GIVEN /DUKE UNIV./ JUN. 1965
GSFC-130

Self-oscillating dc to ac converter with transistor switching to produce a square wave output is used for low and high voltage power sources. The converter has a high efficiency throughout a wide range of loads.

B65-10182
FORCE CONTROLLED SOLENOID DRIVES MICROWELD
TESTER
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
WOO-125

Solenoid-driven device tests the integrity of a microweld joint between an electronic component lead wire and a wire ribbon by applying tension stress to the joint. Variable measured force is provided when either destructive or nondestructive testing is performed.

B65-10183
MODIFIED INTERELEMENT SPACING IMPROVES YAGI
ANTENNA ARRAY
BECK, F. B. JUN. 1965
LANGLEY-130

Symmetrical antenna array is designed by adjusting the Yagi disk interelement spacing so that the grating lobe of the array factor coincides with the first sidelobe of the element pattern.

B65-10184
PRESSURE SENSOR RESPONDS ONLY TO SHOCK WAVE
INNOVATOR NOT GIVEN /BOEING CO./ JUN. 1965
M-FS-238

Pressure sensor responds only to high pressure crest of a shock wave, and will not respond to conditions of overpressure. The sensor uses plates of a battery to produce voltage output used to actuate an alarm signal or crew escape system.

B65-10187
CRYSTAL MEASURES SHORT-TERM, LARGE-MAGNITUDE
FORCES
PFEIFFER, C. G. JUN. 1965
JPL-77

By using the magnitude of piezoelectric crystal response to distortion and compression, this device measures transient accelerations and their rate of change. The invention could be used in a servo control system by supplementing the accelerometer and taking over its function when its range was exceeded.

B65-10193
LOGIC CIRCUIT EXHIBITS OPTIMUM PERFORMANCE
HUSSON, C. JUN. 1965
LANGLEY-129

Performance of circuits are compared to determine the optimum circuit configuration for implementation into microelectronic functions. Comparison is made in terms of power drain, propagation time, and component variations with temperature and load.

B65-10194
ANALOG-TO-DIGITAL CONVERTER HAS INCREASED
RELIABILITY AND REDUCED POWER CONSUMPTION
THORNWALL, J. C. JUN. 1965
GSFC-246

Eight-bit analog-to-digital converter decreases average power consumption and increases component reliability. The converter uses solid-state components in pulse operation and magnetic core components for minimizing power consumption. The magnetic core components also increase reliability.

B65-10195
 DEVICE MEASURES FLUID DRAG ON TEST VEHICLES
 FREEMAN, R. JUDD, J. H. LEISS, A. JUN. 1965
 LANGLEY-34

Electromechanical drag balance device measures the aerodynamic drag force acting on a vehicle as it moves through the atmosphere and telemeters the data to a remote receiving station. This device is also used for testing the hydrodynamic drag characteristics of underwater vehicles.

B65-10196
 INEXPENSIVE ELECTRICAL CONNECTOR IS MOISTURE AND CORROSIONPROOF
 INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965
 MSC-164

Compression-sealed electrical connector made principally of plastic components is used in a corrosive atmosphere. This inexpensive and moistureproof connector can be modified to provide a multiple-pin connector.

B65-10197
 IMPROVED SOLDERLESS CONNECTOR IS EASILY DISCONNECTED
 INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ JUN. 1965
 JPL-SC-060

Compression type solderless connector is easily disconnected and reassembled and resists vibration. The connector, which uses a tapered, split sleeve that is tightened by a nut into a mating bug, is used in place of standard solder lugs and to connect unsolderable wire.

B65-10199
 MODULAR THERMOELECTRIC CELL IS EASILY PACKAGED IN VARIOUS ARRAYS
 EPSTEIN, J. JUN. 1965
 GSFC-339

Modular thermoelectric cells are easily packaged in various arrays to form power supplies have desirable voltage and current output characteristics. The cells employ two pairs of thermoelectric elements, each pair being connected in parallel between two sets of aluminum plates. They can be used as solar energy conversion devices.

B65-10200
 DENSITY TRACE MADE WITH COMPUTER PRINTOUT
 WILSON, M. JUN. 1965
 GSFC-322

Special drum for a computer-controlled printer improves density trace of scientific data. The drum provides uniformly shaped characters and evenly spaced variations of print density that precisely reflect data magnitude. This device plots temperature profiles, geographic contours, pressure gradients, electric potential gradients, and magnetic field configurations.

B65-10202
 QUICK-DISCONNECT COUPLING SAFE TRANSFER OF HAZARDOUS FLUIDS
 DEWITT, R. L. SCHMIDT, H. W. JUN. 1965
 LEWIS-125

Quick-disconnect coupling is used for uncoupling of plumbing during ground-to-vehicle transfer of cryogenic and hazardous fluids. The coupling allows remote positive control of liquid pressure and flow during the transfer operation, remote connection and separation capabilities, and negligible liquid spillage upon disconnection.

02 ENERGY SOURCES

B65-10036
 IONIZATION VACUUM GAGE STARTS QUICKLY, IS UNAFFECTED BY SPURIOUS CURRENTS
 GARWOOD, D. C. FEB. 1965
 JPL-304

Ionization vacuum gauge with a switch-operated starting device and a microammeter begins functioning quickly in a high vacuum. The

microammeter is also protected by its circuit design from spurious currents.

B65-10046
 WIDE-APERTURE SOLAR ENERGY COLLECTOR IS LIGHT IN WEIGHT
 INNOVATOR NOT GIVEN /BECKMAN INSTRUMENTS/ FEB. 1965
 JPL-SC-055

By mounting the Fresnel lens in eight steps above three paraboloidal reflector rings of epoxy resin with aluminized surfaces, a light weight, wide-aperture solar energy collector is devised.

B65-10071
 SIMPLE OPTICAL SYSTEM USED TO ALIGN SPECTROGRAPH
 EXTON, R. J. MAR. 1965
 LANGLEY-92

Optically fast, portable spectrograph incorporates auxiliary optics in a boresight technique to use the zero order of the grating for visual alignment. This device obtains moderately resolved spectra of a multitude of light sources.

B65-10081
 MAGNETIC FIELD TEST COILS ARE TEMPERATURE COMPENSATED
 INNOVATOR NOT GIVEN /SPECTRA PHYS./ APR. 1965
 GSFC-294

Magnetic field test coils with auxiliary winding wound opposite to main coil winding eliminates changes in field configurations due to temperature changes. The auxiliary coil is made with aluminum wire.

B65-10082
 MULTIPLE ELEMENT SOFT X-RAY SOURCE PRODUCES WIDE RANGE OF RADIATION
 CARUSO, A. J. NEUPERT, W. M. MAR. 1965
 GSFC-286

A rotating mount with target elements positioned independently for direct electron bombardment produces soft X-ray radiation with a wide range of characteristics. The device may be used to study solar radiation from a satellite.

B65-10084
 MODIFIED CONTOUR PROJECTOR MAKES EXCELLENT CONTOUR DENSITOMETER
 EXTON, R. J. MAR. 1965
 LANGLEY-93

Thin glass beam splitter, densitometer head, and densitometer electronics are incorporated in a standard contour projector. The density contour of small areas of photographic film can be read. This instrument can be used as a research tool in process engineering.

B65-10100
 ROTATING FILTERS PERMIT WIDE RANGE OF OPTICAL PYROMETRY
 EXTON, R. J. SIVITER, J. H., JR. STRASS, H. K. APR. 1965
 LANGLEY-33

Gear-driven dual filter disks of graduated density vary linearly with respect to rotation, allowing a wide range of photographic pyrometry. This technique is applicable in metallurgy, glass, plastics and refractory research, and crystallography.

B65-10122
 MICROWAVE TECHNIQUE MEASURES PLASMA CHARACTERISTICS
 LEONARD, W. F. APR. 1965
 LANGLEY-134

Plasma electron density and temperature distribution is measured by passing a high frequency millimeter wave through plasma. Variations in density and temperature are determined by measuring insertion loss as the plasma travels between the microwave transmitting and receiving antennas.

B65-10129
 APPARATUS PERMITS FLEXURE TESTING OF SPECIMENS AT CRYOGENIC TEMPERATURES
 DENABURG, C. R. REECE, O. Y. MAY 1965

M-FS-257

Cryostat with support structure for test specimen allows flexure fatigue testing of honeycomb composite sandwich structures at cryogenic temperatures. The cryostat consists of a cryogen container enclosing two pairs of yokes which support two rotating end clamps.

B65-10132

SIMPLE CIRCUIT POSITIONS FILM FRAMES IN PROJECTOR
SILVER, R. H. MAY 1965
JPL-508

Individual frames on a photographic film strip in a projector are automatically positioned by a simple circuit. The circuit uses a photodiode that senses frame registry position and a relay that stops the film-advance motor to suspend the film at point of registry.

B65-10133

PROBE MEASURES CHARACTERISTICS OF HOT GAS STREAM
INNOVATOR NOT GIVEN /PLASMADYNE CORP./ MAY 1965
M-FS-240

Shielded, tubular flow calorimeter operated by valve position measures characteristics of a hot gas stream of unknown composition. Measurements of mass flow density and total heat content per unit mass, total heat content per unit mass only, and pitot pressure are made.

B65-10157

INTERNAL COOLING INCREASES RANGE OF IMMERSION-TYPE TEMPERATURE PROBE
LANZO, C. D. JUN. 1965
LEWIS-171

Temperature probe used in a high temperature, high velocity gas stream consists of cooled outer shell and a cooled platinum sensing tube with iron constantan thermocouples.

B65-10171

FRESNEL ZONE PLATE FORMS IMAGES AT WAVELENGTHS BELOW 1000 ANGSTROMS
INNOVATOR NOT GIVEN /SMITHSONIAN INST./ JUN. 1965
GSFC-231

Fresnel zone plate with openings replacing the usual transparent rings produces images in a vacuum ultraviolet. The plate is made by etching and electrodeposition.

B65-10186

ELECTRONIC MODULES EASILY SEPARATED FROM HEAT SINK
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ JUN. 1965 SEE ALSO B63-10033
MSC-142

Metal heat sink and electronic modules bonded to a thermal bridge can be easily cleaved for removal of the modules for replacement or repair. A thin film of grease between a fluorocarbon polymer film on the metal heat sink and an adhesive film on the modules acts as the cleavage plane.

B65-10188

REFRACTORY METAL SHIELDING /INSULATION/ INCREASES OPERATING RANGE OF INDUCTION FURNACE
EBIHARA, B. T. JUN. 1965
LEWIS-202

Thermal radiation shield contains escaping heat from an induction furnace. The shield consists of a sheet of refractory metal foil and a loosely packed mat of refractory metal fibers in a concentric pattern. This shielding technique can be used for high temperature ovens, high temperature fluid lines, and chemical reaction vessels.

Stainless-steel screen used to lay room temperature curing epoxy adhesive permits reliable bonding of electronic circuits boards. This technique would be useful with thin-walled structures that warp during conventional bonding operations.

B65-10015

IMPROVED CONDUCTIVE PASTE SECURES BIOMEDICAL ELECTRODES
INNOVATOR NOT GIVEN /BAYLOR UNIV./ JAN. 1965 SEE ALSO B64-10025
MSC-107

Nontoxic paste consisting of a dispersion of graphite or silver granules in a mixture of polyvinylpyrrolidone and diluted glycerol secures biomedical electrodes to human skin. Silver paste has a high electrical conductivity and forms a bond between metal and moist or dry skin.

B65-10016

ADHESIVE FOR VACUUM ENVIRONMENTS RESISTS SHOCK AND VIBRATION
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965
MSC-56

A mixture of a polyamide, an epoxy resin, and fine silica or glass microballoons provides an adhesive which is flexible, resistant to shock and vibration, and has improved heat-transfer characteristics.

B65-10024

FLUID PRESSURE USED TO TEST TURBOPUMP BEARINGS
INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ FEB. 1965
NU-0001

Testing of turbopump bearings operating in an intense radiation field is accomplished by the use of a fluid bearing tester providing radial and axial loading.

B65-10032

WIRE WINDING INCREASES LIFETIME OF OXIDE-COATED CATHODES
KERSLAKE, W. VARGO, D. FEB. 1965 SEE ALSO A1AA PAPER-64-683
LEWIS-154

Refractory-metal heater base wound with a thin refractory metal wire increases the longevity of oxide-coated cathodes. The wire-wound unit is impregnated with the required thickness of metal oxide. This cathode is useful in magneto-hydrodynamic systems and in electron tubes.

B65-10034

GAGE MEASURES ELECTRICAL CONNECTOR PIN RETENTION FORCE
INNOVATOR NOT GIVEN /RCA/ FEB. 1965
JPL-SC-071

The retention force of a female connector pin is measured by observing the action of a calibrated spring in a gauge consisting of housing, a plunger terminating in a male subminiature connector pin and the tension spring.

B65-10043

MOUTHPIECE ADAPTER FOR PIPETTES PROTECTS MOUTH FROM HARMFUL LIQUIDS
MC SMITH, D. G. FEB. 1965
LANGLEY-47

To prevent the laboratory technicians mouth from contacting harmful liquids, a device with a hermetically sealed elastic bellows is attached to a standard pipette.

B65-10044

FLEXIBLE CURTAIN SHIELDS EQUIPMENT FROM INTENSE HEAT FLUXES
INNOVATOR NOT GIVEN /ARROWHEAD PROD./ MAR. 1965
M-FS-48

Flexible, high strength curtain made of fiberglass-silicone elastomer laminate provides thermal shielding for equipment.

B65-10058

POROUS CERAMIC CURES AT MODERATE TEMPERATURES, IS GOOD HEAT INSULATOR
EUBANKS, A. G. HUNKELER, R. E. FEB. 1965

03 MATERIALS (CHEMISTRY)

B65-10004

SCREENING TECHNIQUE MAKES RELIABLE BOND AT ROOM TEMPERATURE
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
M-FS-227

GSFC-162

Good thermal insulation is provided by a foamed ceramic material with the desirable characteristics of low thermal conductivity, the ability to withstand thermal shock and of accurately controllable density and porosity. It is easily molded and adheres to metals but not plastics.

B65-10065

SPHERICAL MODEL PROVIDES VISUAL AID FOR CUBIC CRYSTAL STUDY

BACIGALUPI, R. J. SPAKOWSKI, A. E. MAR. 1965
LEWIS-108

Transparent sphere of polymethylmethacrylate with major zones and poles of cubic crystals is used to make crystallographic visualizations and to interpret Laue X-ray diffraction of single cubic crystals.

B65-10083

DIDYMIUM COMPOUND IMPROVES NICKEL-CADMIUM CELL

INNOVATOR NOT GIVEN /GE/ MAR. 1965
GSFC-295

Nickel electrodes impregnated with an additive solution of didymium hydrate and nitric acid mixed with nickel nitrate increases ampere-hour capacity of cells and does not affect the voltage characteristics.

B65-10088

FIBERGLASS PARTS CURED DURING FILAMENT WINDING ELIMINATES OVEN, SAVES TIME

CARMODY, R. J. APR. 1965
M-FS-14

Resistance wire layer is introduced during winding of the fiberglass filaments with simultaneous heating. Emission of heat from the wire layer cures second fiberglass layer.

B65-10092

LIGHTWEIGHT ALUMINUM CASTING ALLOY IS USEFUL AT CRYOGENIC TEMPERATURES

APR. 1965
M-FS-267

M-45, a lightweight, high purity aluminum casting alloy has superior tensile properties for use at cryogenic temperatures.

B65-10095

CARBON-ARC ROD HOLDER HAS LONG LIFE, REDUCES ARC SPLATTER

INNOVATOR NOT GIVEN /RCA/ APR. 1965
MSC-144

Carbon-arc rod holder with front end of beryllium oxide, a high electrical resistor and good thermal conductor, prevents nonuniform burning of the positive carbon rod and corrosion of the rod holder. Useful in optical instrument light sources.

B65-10106

MINIATURE BEARINGS LUBRICATED BY SONIC DISPERSION METHOD

INNOVATOR NOT GIVEN /LITTON IND./ APR. 1965
M-FS-202

Evenly distributing a monomolecular film over the balls and tracks of miniature precision ball bearings by sonic dispersion results in precise lubrication which prevents lubricant bleed out to adjacent components. Varying the lubricant-to-solvent ratio of the mixture causes varying lubricant coating thicknesses.

B65-10107

CRACK DETECTION METHOD IS SAFE IN PRESENCE OF LIQUID OXYGEN

INNOVATOR NOT GIVEN /BOEING CO./ APR. 1965
M-FS-236

Visual flaw detection method for metals utilizes color precipitate. This method can be used safely in the presence of liquid oxygen.

B65-10117

DOUBLE GLOVES REDUCE CONTAMINATION OF DRY BOX ATMOSPHERE

HERBELL, T. P. QUANTINETZ, M. REINHARDT, G. APR. 1965

LEWIS-211

Pair of encased low permeability hand gloves between which an inert gas circulates reduces dry box contamination. This innovation is applicable to dry boxes using radioactive and alkali metal compounds, submicron powders, and liquid metals.

B65-10136

VAPOR PRESSURE MEASURED WITH INFLATABLE PLASTIC BAG

INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ MAY 1965

GSFC-281

Deflated plastic bag in a vacuum chamber measures initial low vapor pressures of materials. The bag captures the test sample vapors and visual observation of the vapor-inflated bag under increasing external pressures yields pertinent data.

B65-10140

GALVANIC CORROSION REDUCED IN ALUMINUM FABRICATIONS

MAY 1965
M-FS-272

Titanium alloy fasteners dipped in zinc chromate primer are installed while wet in protective coated aluminum panels to reduce galvanic corrosion. Moisture-tight seals at fastener points are also provided.

B65-10156

INORGANIC PAINT IS DURABLE, FIREPROOF, EASY TO APPLY

SCHUTT, J. B. JUN. 1965
GSFC-366

Inorganic paint with a water-potassium silicate base is impervious to water. It is also fireproof and adheres to various surfaces exposed to wide temperature fluctuations.

B65-10162

ELECTROLESS NICKEL RESIST USED IN ALKALI-ETCHING OF ALUMINUM

INNOVATOR NOT GIVEN /SCHJELDAHL /G. T./ CO./ JUN. 1965
GSFC-284

Electroless nickel resist is unaffected by caustic soda applied as a milling or etching agent on aluminum.

B65-10164

IRRADIATION IMPROVES PROPERTIES OF AN AROMATIC POLYESTER

BELL, V. L., JR. JUN. 1965
LANGLEY-115

Aromatic polyester, PEN-2,6, is improved through cross-linking effected by radiation. Polymer retains properties of high tensile strength and toughness and stability at high temperatures.

B65-10167

REFRACTORY OXIDES EVALUATED FOR HIGH-TEMPERATURE USE

JUN. 1965
LANGLEY-121

Partially calcia-stabilized zirconia used for insulation and heat-storage in high temperature /3000 deg F to 4000 deg F/ cyclically operated pebble bed air heater.

B65-10172

ALUMINUM ALLOYS PROTECTED AGAINST STRESS-CORROSION CRACKING

INNOVATOR NOT GIVEN /ALCOA RES. LABS./ JUN. 1965
M-FS-235

Topcoat of epoxy-polyamide paint is effective protection for aluminum alloys against stress corrosion cracking. The paint can be used on unprimed surfaces.

B65-10173

PEEL RESISTANCE OF ADHESIVE BONDS ACCURATELY MEASURED

INNOVATOR NOT GIVEN /RCA/ JUN. 1965
GSFC-320

Strength of adhesive bond between layers of laminated material is tested by peel force to the facing with a tensile testing machine. Testing

jig has stainless steel rollers which constrain material to move horizontally while maintaining free end of facing at constant 90 deg angle.

B65-10175
TANTALUM CATHODE IMPROVES ELECTRON-BEAM
EVAPORATION OF TANTALUM
INNOVATOR NOT GIVEN /ELECTRO-OPTICAL SYSTEMS/
JUN. 1965

JPL-W00-021
Tantalum cathode is used in assembly for electron beam evaporation of tantalum onto a substrate. The cathode and anode are made of pure tantalum rather than tungsten to prevent contamination of the tantalum film deposited on the substrate.

B65-10179
REUSABLE NEOPRENE JACKET PROTECTS PARTS FOR
CHEMICAL MILLING
INNOVATOR NOT GIVEN /RYAN AERONAUTICAL CO./ JUN.
1965

W00-071
Reusable neoprene jacket is used to prepare metal part or panel for chemical milling. Jacket covers back and upper rim of part and is sealed before the masking solution is applied to surface to be milled. This reduces amount of masking material required for milling identical parts and increases production.

B65-10189
TESTING DEVICE SUBJECTS ELASTIC MATERIALS TO
BIAXIAL DEFORMATIONS
BECKER, G. W. JUN. 1965
JPL-616

Testing device stretches elastic materials biaxially over large deformation ranges and varies strain ratios in two perpendicular directions. The device is used in conjunction with a tensile testing machine, which holds the specimen and permits control over the direction and magnitude of the stresses applied.

B65-10190
IR-TRANSMISSION GLASSES FORMED FROM OXIDES OF
BISMUTH AND TELLURIUM
ULRICH, D. R. JUN. 1965
M-FS-279

Bismuth trioxide-tellurium dioxide glasses have improved infrared transmission characteristics.

04 LIFE SCIENCES

NO CITATIONS IN THIS ISSUE

05 MECHANICAL

B65-10003
ILLUMINATED DISPLAY PANEL IS EASILY CHANGED
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
MSC-108

Photographic negative placed between two plastic sheets and back-lighted in selected areas prepares illuminated multicolored display panels. The device is inexpensive, easily changed, and quickly fabricated.

B65-10007
THERMOCOMPRESSION BONDING PRODUCES EFFICIENT
SURFACE-BARRIER DIODE
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
JPL-SC-066

Thermocompression bonding of a gold wire to a gallium-arsenide wafer produces a quality surface barrier diode with fast recovery times. The properties of this combination may be useful in semiconductor devices.

B65-10008
SHOCK ABSORBER PROTECTS MOTIVE COMPONENTS
AGAINST OVERLOADS
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ JAN.
1965
W00-092

Shock absorber with an output shaft, hollow gear, and a pair of springs forming a resilient driving connection between shaft and gear, operates when abnormally high torques are applied. This simple durable frictional device is valuable in rotating mechanisms subject to sudden overloads.

B65-10009
BONN, J. L. GARDNER, D. E. FEB. 1965
LEWIS-182

A tool is designed which facilitates the forming of wire grids used in manufacturing strain gauge grids. Flattening the grid wire by a cold working process produces a stabilized grid which can be readily handled for storage or shipment.

B65-10014
USE OF TEAR RING PERMITS REPAIR OF SEALED
MODULE CIRCUITRY
INNOVATOR NOT GIVEN /IBM/ JAN. 1965
M-FS-210

Improved packaging technique for modulator electronic circuitry utilizes a tear ring which may be removed for repair and resealed. The tear ring is put over the container and header to which the electronic circuit assembly has been attached.

B65-10017
EXPLOSIVES ACTUATE NONMAGNETIC INDEXING DEVICE
BAUERNSCHUB, J. P., JR. JAN. 1965
GSFC-237

Nonmagnetic explosive-actuated indexing device creates magnetic field that can be tolerated by a sensor.

B65-10019
WIDE-ANGLE SENSOR MEASURES RADIANT HEAT ENERGY
IN CORROSIVE ATMOSPHERES
INNOVATOR NOT GIVEN /BOEING CO./ JAN. 1965 SEE
ALSO B63-10004
M-FS-228

Ellipsoidal cavity device measures radiant heat energy over wide incident angles in corrosive atmospheres. The instrument consists of a cavity in copper heat sink sealed with sapphire window to protect thermocouple.

B65-10020
OPTICAL ARRANGEMENT INCREASES USEFUL LIGHT
OUTPUT OF SEMICONDUCTOR DIODES
INNOVATOR NOT GIVEN /IBM/ JAN. 1965 SEE ALSO
B64-10297
JPL-SC-064

Useful light output of semiconductor diodes increased by incorporating the diode in an integral reflector and lens assembly. This reduces normal reflection losses between the diode and the air.

B65-10021
PICKUP DEVICE READS PRESSURES FROM PORTS IN
ROTATING MECHANISMS
JANAS, B. JAN. 1965 SEE ALSO B64-10031
LEWIS-158

Indexing pickup monitors fluid pressures from ports at various angles on high or low speed rotating mechanisms in operation. By a simple axial movement of a takeoff connector, angle changing takes place. This device can be adapted for electric current monitoring.

B65-10022
KNOB LINKAGE PERMITS ONE-HAND CONTROL OF
SEVERAL OPERATIONS
CODDING, G. C. LAVENDER, C. E. JAN. 1965
MSC-30

Electromechanical device with single knob provides one-hand control of numerous electrical or mechanical functions. The principle of this design may have application to remote-control switching devices.

B65-10027
FLUID-PRESSURE MEASUREMENT APPARATUS USES
SHORT-LENGTH MANOMETER TUBES
SATHER, B. I. MAR. 1965
LEWIS-28

System of short length U-tube manometers with a proportionally divided reference pressure measures high fluid pressures.

B65-10029
SEISMIC TRANSDUCER MEASURES SMALL HORIZONTAL
DISPLACEMENTS
GREENWOOD, T. L. MAR. 1965
M-FS-81

Pendular seismic transducer mounted on base plate measures small horizontal displacements of structures subjected to vibration where no fixed reference point is available. Enclosure of transducer in transparent plastic case prevents air currents from disturbing the pendulum balance.

B65-10031
SPRING LOADED BEADED CABLE MAKES EFFICIENT WIRE PULLER
 INNOVATOR NOT GIVEN /N. AM. AVIATION/ FEB. 1965
 W00-108

An efficient wire puller consists of a steel probe with a hole in one end fastened to a steel cable which is strung with metal beads compressed by spring loaded ferrules. This device allows cables to be pulled or forced around bends and elbows in pipes or tubes.

B65-10035
OCEANBORNE TRANSPONDER PLATFORM HAS GOOD STABILITY
 INNOVATOR NOT GIVEN /IBM/ FEB. 1965
 M-FS-171

Determination of space vehicle range and orbit is aided by a stable subsurface oceanic transponder. This device consists of a buoy held below the surface by a three-point system of anchors and mooring lines with an above surface antenna.

B65-10037
IMPROVED HOLDER PROTECTS CRYSTAL DURING HIGH ACCELERATION AND IMPACT
 LE VAY, K. H. FEB. 1965
 JPL-463

A plastic holder, which retains a crystal blank with standard silvered contacts sandwiched between two copper contacts, protects the crystal against vibration during high acceleration and impact.

B65-10038
FASTENER PROVIDES COOLING AND COMPENSATES FOR THERMAL EXPANSION
 INNOVATOR NOT GIVEN /AEROJET-GEN. CORP./ FEB. 1965
 NU-0003

A fastener composed of a concentric bellows welded to two plates forming an annular cavity provides cooling and thermal expansion compensation in a high temperature environment.

B65-10039
NONRESONANT SUPPORT FACILITATES VIBRATION TESTING OF STRUCTURES
 INNOVATOR NOT GIVEN /BOEING CO./ FEB. 1965
 M-FS-224

An essentially frictionless four-point support system which utilizes bearings and pistons and allows for determination of vibration frequencies of large structures. Retardation of vertical or horizontal motion is due to the viscous damping by the hydrostatic pressure of the oil or by adjustment of the gas volume in the accumulator.

B65-10040
VALVE DESIGNED WITH ELASTIC SEAT
 MAC GLASHAN, W. F., JR. FEB. 1965
 JPL-442

Absolute valve closure is accomplished by a machined valve with an axially annular channel which changes the outlet passage into a thin tubular elastic seat member with a retainer backup ring. The elasticity of the seat provides tight conformity to ball irregularity.

B65-10042
FLEXURE SUPPORT SYSTEM PROTECTS THERMALLY AND DYNAMICALLY LOADED MODELS
 CRUMPLER, W. B. FEB. 1965
 LANGLEY-39

The design of an eight legged flexure support system which permits differential thermal expansion of thin skinned models subjected to high temperatures is done by setting the lengthwise axes of the supporting legs approximately normal to the line of absolute motion of the model supported.

B65-10049
SCREW LOCKING CUPS QUICKLY AND NEATLY CRIMPED
 INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965
 NU-0009

A tool consisting of a positioning pin which is engaged in the screw and depressed until the tool body contacts the locking cup permits quick and neat crimping.

B65-10053
SEAL ALLOWS BLIND ASSEMBLY AND THERMAL EXPANSION OF COMPONENTS
 INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./ FEB. 1965
 NU-0005

The design of a seal consisting of two concentric cylinders with outer and inner threaded elements attached to each side of the system interface withstands large temperature changes and allows for blind assembly.

B65-10060
NEW ALLOY BRAZES TITANIUM TO STAINLESS STEEL
 INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1965
 M5C-102

Brazing alloy of palladium, silver and silicon is used in brazing titanium to stainless steel without embrittling metals at the brazed interfaces.

B65-10063
CERAMIC-COATED BOAT IS CHEMICALLY INERT, PROVIDES GOOD HEAT TRANSFER
 SPITZER, C. R. MAR. 1965
 LANGLEY-90

Refractory metal foil sprayed with ceramic coating serves as evaporating boat for inorganic materials. The high thermal conductivity of this boat makes it useful with ohmic heaters.

B65-10064
DEVICE MEASURES CURVED SURFACE FINISH ON GEAR TEETH
 INNOVATOR NOT GIVEN /GE/ MAR. 1965
 W00-112

Measurement of the curved surface finish on gear teeth is made by a device used in conjunction with a conventional profilometer.

B65-10070
SIMPLE SCALE INTERPOLATOR FACILITATES READING OF GRAPHS
 FETTERMAN, D. E., JR. MAR. 1965
 LANGLEY-88

Simple transparent overlay with interpolation scale facilitates accurate, rapid reading of graph coordinate points. This device can be used for enlarging drawings and locating points on perspective drawings.

B65-10074
NITROGEN DIOXIDE PRODUCED BY SELF-SUSTAINED PYROLYSIS OF NITROUS OXIDE
 SABOL, A. P. MAR. 1965
 LANGLEY-32

Apparatus is developed for achieving continuous self-sustaining pyrolysis reaction in the production of nitrogen dioxide from nitrous oxide. The process becomes self-sustaining because of the exothermic reaction and the regenerative heating of the gases in the pyrolysis chamber.

B65-10075
TENSION IS SERVO CONTROLLED IN FILM ADVANCE SYSTEM
 INNOVATOR NOT GIVEN /AM. OPT. CO./ MAR. 1965
 LANGLEY-54

Servocontrol device feeds film into a roller system. Two linear potentiometers connected to spring loaded tension rollers furnish servo input signal. Can be used in any continuous material transport system.

B65-10077
NEW COUPLING COMPENSATES FOR SHAFT MISALIGNMENT
 INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./

MAR. 1965
NU-0013

Coupling of splined shafts with slight misalignment is accomplished by means of a crown spline and sleeve arrangement.

B65-10078
FABRICATION METHOD PRODUCES HIGH-GRADE ALUMINA CRUCIBLES
PALMOUR, H. MAR. 1965
M-FS-216

Alumina-binder mixture, which has been dry pressed in a die using a mating punch, forms crucibles of various configurations and after firing results in a ceramic structure for use in diffusion experiments.

B65-10090
COMPACT ASSEMBLY GENERATES PLASTIC FOAM, INFLATES FLotation BAG
APR. 1965
LANGLEY-96

Device for generating plastic foam consists of an elastomeric bag and two containers with liquid resin and a liquid catalyst. When the walls of the containers are ruptured the liquids come into contact producing foam which inflates the elastomeric bag.

B65-10094
CUTTER AND STRIPPER REDUCES COAXIAL CABLE CONNECTION TIME
THOMPSON, F. E. APR. 1965
ARC-40

Consisting of three pivoted members, this hand cutter and stripper positions to cut shielding and insulation at the right distance and depth. Coaxial cable is prepared quickly and accurately for connector attachment.

B65-10098
CONTACT STRESSES CALCULATED FOR MINIATURE SLIP RINGS
ALBRIGHT, F. G. DOMEREST, K. E. HORTON, J. C. APR. 1965
M-FS-280

Using mathematical formulations to plot the graphs of the contact preload versus the Hertzian load, calculations of unit loading of the preloaded brushes on slip rings can be made. This optimizes the design of contact brushes and miniature slip rings.

B65-10099
SLIT FEEDS REDUCE UNBALANCED TORQUES IN GAS-LUBRICATED BEARINGS
BATSCH, F. F. LAUB, J. H. APR. 1965 SEE ALSO
B63-10123 AND B64-10050
JPL-264

Gas-lubricated journal bearing with narrow radial slits forming circular gas-feed passages regulates gas flow in precision instruments. Asymmetrical flow pattern and unbalanced torques are prevented.

B65-10101
JIG AND FIXTURE AID FABRICATION OF TUNGSTEN RIVETS
CHATTIN, J. H. APR. 1965
LEWIS-185

Jig and fixture that holds several lengths of tungsten rods produces rivets simply and inexpensively. The apparatus allows sufficient tungsten to be exposed for heating and forging into a rivet head.

B65-10104
LEAF-SPRING SUSPENSION PROVIDES ACCURATE PARALLEL DISPLACEMENTS
MC CREARY, R. A. APR. 1965
JPL-480

Leaf-spring suspension device with the springs symmetrically mounted on suspension frames provides accurate parallel displacements of loads over short linear distances.

B65-10109
ROCK BIT REQUIRES NO FLUSHING MEDIUM TO MAINTAIN DRILLING SPEED
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ APR.

1965
JPL-W00-031

Steel drill bit having terraces of teeth intersected by spiral grooves with teeth permits the boring of small holes through rock with low power. The cuttings are stored in a chamber behind the cutting head. Could be used as sampling device.

B65-10110
MAGNETS POSITION X-RAY FILM FOR WELD INSPECTION
WAGNER, R. P. APR. 1965
M-FS-253

Film-positioning device uses magnets to hold X-ray film for weld inspection in nonferrous structures, such as tanks, where access to interior points is difficult.

B65-10111
PROBE TESTS MICROWELD STRENGTH
INNOVATOR NOT GIVEN /DOUGLAS AIRCRAFT CO./ APR. 1965
W00-118

Probe is developed to test strength of soldered, brazed or microwelded joints. It consists of a spring which may be adjusted to the desired test pressure by means of a threaded probe head, and an indicator lamp. Device may be used for electronic equipment testing.

B65-10113
SHOCK MOUNT ISOLATES PRESSURE TRANSDUCERS FROM VIBRATION
ROGERO, R. S., JR. APR. 1965
JPL-631

Pressure transducer is isolated from shock and vibration forces by a pressure-compensated shock mount. Silicone elastomer O-rings within the shock mount serve as shock and vibration-damping pads.

B65-10114
AVERAGING PROBE REDUCES STATIC-PRESSURE SENSING ERRORS
RITCHIE, V. S. APR. 1965
LANGLEY-36

Averaging the high and low pressure admitted to a plenum through circumferentially spaced orifices provides a probe that accurately senses the free-stream static pressure on an aerodynamic surface. This surface does not have a preferred angle of inclination to the direction of the airstream cross flow.

B65-10115
INERT GAS SPRAYING DEVICE AIDS IN REPAIR OF HAZARDOUS SYSTEMS
TELEHA, S. APR. 1965
LEWIS-88

Inert gas spraying device aids in safely making mechanical repairs to a cryogenic fluid system without prior emptying of the system. This method can be applied to any natural or bottled gas system and with modifications to gasoline transports.

B65-10116
LOW-COST TOOL MINIMIZES DAMAGE TO O-RINGS DURING INSTALLATION
INNOVATOR NOT GIVEN /N. AM. AVIATION/ APR. 1965
MSC-140

Tapered cylindrical tool enables O-ring installation over threaded fasteners without seal damage.

B65-10121
FLOW CONTROL VALVE IS INDEPENDENT OF PRESSURE DROP
INNOVATOR NOT GIVEN /THIokol CHEM. CORP./ APR. 1965
JPL-W00-039

Remote control of fluid flow in a low-power system is established by a flow control valve with a flapper and nozzle flow control. Constant rates are maintained despite fluctuating pressure across the valve.

B65-10126
COLLAPSIBLE TRUSS STRUCTURE IS AUTOMATICALLY
EXPANDABLE
INNOVATOR NOT GIVEN /GE/ MAY 1965
GSFC-265

Coil springs wound with maximum initial tension in a three-truss, closed loop structure form a collapsible truss structure. The truss automatically expands and provides excellent rigidity and close dimensional tolerance when expanded.

B65-10130
COLLAR POSITIONS STRIP STOCK USED TO FORM COIL
ON MANDREL
BLAZE, C. J. JUN. 1965
LEWIS-198

Guide collar fastened to a mandrel helps form a coil of strip sheet metal stock. The collar maintains the strip stock in its proper position during winding of each turn of the coil.

B65-10131
APPARATUS FACILITATES PRESSURE-TESTING OF
METAL TUBING
GYORGAK, C. A. MAY 1965
LEWIS-174

Burst-testing of refractory metal tubing is conducted in an apparatus in which tubular specimens are firmly gripped and test pressures and temperatures are applied. Porosity, flaw, and fatigue-stress rupture are also tested.

B65-10134
HIGH PERMEABILITY SEMICONDUCTORS PERMIT
CLOSE-TOLERANCE SOLDERING
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ MAY
1965
GSFC-319

High permeability semiconductors concentrate magnetic field energy in small areas to allow soldering of small components. This device can be used in microminiature parts in thin-film fabrication.

B65-10135
COILED SPRING MAKES SELF-LOCKING DEVICE FOR
THREADED FASTENERS
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAY 1965
MSC-149

Coiled spring device provides both easy self-locking and disassembly for screw-threaded fasteners. When the fastener turns in one direction the spring grips one of the fastener threads and releases when the fastener turns in the opposite direction.

B65-10141
INTEGRAL RIBS FORMED IN METAL PANELS BY COLD-
PRESS EXTRUSION
BRADIE, P. R. SCHUERER, P. H. MAY 1965
M-FS-230

Metal panels with integral ribs are formed by the cold-press extrusion method without material loss. Integral ribs in aluminum-alloy panels are formed by this process.

B65-10144
LIGHTWEIGHT LOAD SUPPORT SERVES AS VIBRATION
DAMPER
LAYMAN, W. E. MAY 1965
JPL-661

Omnidirectional antennas and solar panels can be supported by a thin-walled tubular strut. Silicon grease is used as the vibration-damping medium and a coil spring supports static loads.

B65-10147
IMPROVED FLUID CONTROL VALVE EXTENDS DIAPHRAGM
LIFE
MAC GLASHAN, W. F. MAY 1965
JPL-345

Wear resistance of flexible diaphragms in fluid control valves is increased by incorporating a soft rubber washer at the bottom of the piston, a flexible buffer between the diaphragm and the valve seat, and a fluid feedback arrangement. The stress and wear of components at the valve seat

are minimized.

B65-10148
BIDIRECTIONAL TORQUE FILTER ELIMINATES
BACKLASH
BAKER, R. VEILETTE, L. WILLIAMS, S. MAY 1965
GSFC-335

Two elastic springs connecting a hub and two spur gears absorb bidirectional step torque differentials and provide antibacklash characteristics between input and output shafts. This device is used in precise control systems.

B65-10149
CANTILEVER SPRINGS MAINTAIN TENSION IN
THERMALLY EXPANDED WIRES
TERSELIC, R. A. MAY 1965
LEWIS-136

Two deflected cantilever springs strung with wire provide force displacement compensation to maintain tension in the wires as they undergo thermal expansion. This method of maintaining tension in thermally expanded wires is used in electric space heaters and residential heat exchangers.

B65-10150
METAL BELLOWS CUSTOM-FABRICATED FROM TUBING
MAY 1965
LEWIS-192

Mandrel assembly mounted in a lathe chuck is used with a forming wheel to roll-form bellows from standard sheet metal tubing. Spacers and mandrels of various sizes custom-fabricate bellows of any desired dimensions.

B65-10153
INNOVATOR NOT GIVEN /MIT/ MAY 1965
MSC-127

Pretreating metal with a thin coating of pure titanium improves the wettability and flow of brazing alloys. This can be used in the manufacturing of aviation and aerospace components where high strength-to-weight ratio must be achieved.

B65-10154
SYSTEM MEASURES UNIDIRECTIONAL FORCES,
EXCLUDES EXTRANEEOUS FORCES
BEHRENDT, D. R. HEGLAND, D. E. MAY 1965
LEWIS-170

System measures unidirectional force without interference from other directional forces. The measuring apparatus is mounted so that it only moves vertically and is constrained from horizontal and rotational movement. This system can be used to accurately measure small forces in one direction, or as an analytic balance.

B65-10155
FRICTIONLESS BEARING USES PERMANENT MAGNETS
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAY 1965
1965
MSC-32

Frictionless bearing using permanent magnets on one end of the rotating shaft member and in the stationary housing member is used for lightly loaded high speed rotating shafts.

B65-10160
LOW-COST SEAL COMPENSATES FOR SURFACE
IRREGULARITIES
/AEROJET-GEN. CORP./ JUN. 1965
NU-0016

Seal assembly consisting of a steel V-ring and a perforated tubular fluorocarbon polymer O-ring provides a barrier to gaseous and liquid hydrogen under high pressure.

B65-10163
DEVICE DISCONNECTS SEVERAL COUPLINGS
SIMULTANEOUSLY
KORSYTHE, A. K. JUN. 1965
JPL-226

Actuator assembly disconnects electric cable and fluid-line coupling from a rocket. The disconnecter incorporates interconnected hydraulic cylinders which effect an equal and simultaneous displacement of pistons upon admission of

compressed air through a solenoid control valve.

B65-10166

SPLICE PLATE DESIGN ASSURES STRUCTURAL SEPARATION BY MILD EXPLOSIVE

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965

MSC-137

Splice plate with mechanical joint is separated by expanding gases of a mild detonating fuse. The gas pressures of the low-yield explosive eliminate component fragmentation and achieve excellent control of the separation line.

B65-10168

LATHE ATTACHMENT USED TO MACHINE ELLIPTICAL CONES

ALLEN, J. H., SR. WOBIG, D. A. JUN. 1965

MSC-100

Close-tolerance elliptical cones are fabricated by cutting-tool guide assembly used with conventional tracer cartridge on turret lathe accurately produced in two machine operations

B65-10170

METAL PARTS HYDROSIZED BY EXPLOSIVE FORCE

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965

M-FS-289

Large metal parts are sized by a charge exploded above a sealed container filled with evacuated die and water. Explosive hydrosizing achieves close dimensional tolerances, eliminates damage to the surface, and allows longer force application and more even pressure distribution.

B65-10174

PRESSURE TRANSDUCER SYSTEM IS FORCE-BALANCED, HAS DIGITAL OUTPUT

INNOVATOR NOT GIVEN /GIANNINI CONTROLS CORP./

M-FS-154

Forced-balanced pressure transducer and associated circuitry controls pressure testing of space equipment systems under actual operating conditions. The transducer and circuitry automatically converts the sensed pressure to digital form.

B65-10176

DEVICE ENABLES MEASUREMENT OF MOMENTS OF INERTIA ABOUT THREE AXES

CONN, J. JUN. 1965

GSFC-49

Device measures moments of inertia of an irregularly shaped mass about three mutually perpendicular axes by the standard pendulum and torque methods. A fixture suspends the test mass at one point and can be adjusted to allow oscillation of the mass.

B65-10177

EPOXY-RESIN PATTERNS SPEED SHELL-MOLDING OF ALUMINUM PARTS

INNOVATOR NOT GIVEN /ALABAMA UNIV./ JUN. 1965

M-FS-303

Half patterns cast from commercial epoxy resin containing aluminum powder are used for shell-molding of aluminum parts. The half patterns are cast in plastic molds of the original wooden pattern. Ten serviceable sand-resin molds are made from each epoxy pattern.

B65-10180

NEW NUT AND SLEEVE IMPROVE FLARED CONNECTIONS

GARRARD, J. S. JUN. 1965

M-FS-194

Improved nut and sleeve of standard stainless steel flared tube connection allows forces on the mating surfaces to be uniformly applied. This can be applied to pressurized fluid systems such as refrigeration, air conditioning, and hydraulic systems.

B65-10181

HAND TOOL BENDS COMPONENT LEADS ACCURATELY

INNOVATOR NOT GIVEN /CHRYSLER CORP./ JUN. 1965

M-FS-308

Hand-operated die set bends, without damage, electrical component leads to perfectly match holes in printed circuit board. This tool speeds up printed circuit fabrication and reduces the number of component rejections.

B65-10185

DISPENSING SYSTEM ELIMINATES TORSION IN DEPLOYED HOSES

INNOVATOR NOT GIVEN /IIT RES. INST./ JUN. 1965

MSC-80

Dispensing system uses a rotating drum, transfer arm, and stationary drum to deploy, reel in, and store an attached hose. This system which eliminates torsion and minimizes strain and wear of flexible hoses, is used for handling flexible cables that have one end permanently attached to an outlet or connector.

B65-10191

EXTENDIBLE COLUMN CAN BE STOWED ON DRUM

HOLTZ, G. M. HOWARD, E. A. JUN. 1965

JPL-686

Column formed from a series of segments held together by an internal spring or cable can be coiled on a drum or extended into a rigid structure. This storable coil is useful in boring for soil samples and supporting electrical and optical sensors.

B65-10192

SPIRAL HEATER COILS HAND-FORMED WITH FIXTURE

CHATTIN, J. H. JUN. 1965

LEWIS-208

Bench model jig and fixture used for hand fabricating spiral coils of various lengths from flat strip stock. This tool is used to make springs and coils to custom lengths.

B65-10198

SELF-ALIGNING FIXTURE USED IN LATHE CHUCK JAW REFACING

LINN, C. C. JUN. 1965

FRC-21

Self-aligning tool positions and rigidly holds lathe chuck jaws for refacing and truing of the clamping surface. The jaws clamp the fixture in the manner of clamping a workpiece. The fixture can be modified to accommodate four-jawed checks.

B65-10201

ELECTRICAL CABLE CONNECTOR-CLAMP HAS SMOOTH EXTERIOR SURFACE

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1965

MSC-154

Electrical cable connector-clamp fitted with a collet has a smooth exterior surface that can be easily gripped. The collet clamps a portion of the cable and provides for connecting it to a standard electrical connector.

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Synchronized pulse generator needs no external power GSFC-274	B65-10072	02-01	Electrical cable connector-clamp has smooth exterior surface MSC-154	B65-10201	02-05
Light-sensitive potentiometer measures product of two variables GSFC-240	B65-10076	02-01	CLEAVAGE Electronic modules easily separated from heat sink MSC-142	B65-10186	02-02
Phase detector circuit synthesizes own reference signal M-FS-247	B65-10080	02-01	CLOCK Variable frequency magnetic multivibrator generates stable square-wave output GSFC-AE-21	B65-10124	02-01
System selects framing rate for spectrograph camera LANGLEY-55	B65-10086	02-01	CLOSURE Valve designed with elastic seat JPL-442	B65-10040	02-05
Simple circuit functions as frequency discriminator for PFM signals GSFC-267	B65-10102	02-01	COAXIAL CABLE Cutter and stripper reduces coaxial cable connection time ARC-40	B65-10094	02-05
Unijunction frequency divider is free of backward loading JPL-W00-010	B65-10112	02-01	COIL Improved magnetometer uses toroidal gating coil GSFC-249	B65-10103	02-01
Simplified electrometer has excellent operating characteristics JPL-413	B65-10125	02-01	Collapsible truss structure is automatically expandable GSFC-265	B65-10126	02-05
Traveling-wave tube circuit simplifies microwave relay GSFC-299	B65-10127	02-01	Collar positions strip stock used to form coil on mandrel LEWIS-198	B65-10130	02-05
Piezoresistive gage tests pin-connector sockets JPL-675	B65-10128	02-01	Spiral heater coils hand-formed with fixture LEWIS-208	B65-10192	02-05
Simple circuit positions film frames in projector JPL-508	B65-10132	02-02	COLD PRESSING Integral ribs formed in metal panels by cold-press extrusion M-FS-230	B65-10141	02-05
Instrument calibrates low gas-rate flowmeters MSC-134	B65-10137	02-01	COLLECTOR Wide-aperture solar energy collector is light in weight JPL-SC-055	B65-10046	02-02
High-gain amplifier has excellent stability and low power consumption GSFC-272	B65-10138	02-01	COLUMN Extendible column can be stowed on drum JPL-686	B65-10191	02-05
Auxiliary circuit enables automatic monitoring of EKG'S MSC-106	B65-10142	02-01			
Digital-output cardiometer measures rapid changes in heartbeat rate MSC-133	B65-10143	02-01			
Rotor position sensor switches currents in					

SUBJECT INDEX

CRYOSTAT

COMMUNICATION SYSTEM

Superconductor magnets used for stagger-tuning
traveling-wave maser
GSFC-292 B65-10165 02-01

COMPENSATION

Fastener provides cooling and compensates for
thermal expansion
NU-0003 B65-10038 02-05

COMPONENT RELIABILITY

Analog-to-digital converter has increased
reliability and reduced power consumption
GSFC-246 B65-10194 02-01

COMPUTER METHOD

Computer modification reduces time of
performing iterative division
M-FS-166 B65-10005 02-01

Density trace made with computer printout
GSFC-322 B65-10200 02-01

COMPUTER PROGRAM

Computer programs simplify optical system
analysis
GSFC-306 B65-10093 02-01

CONE

Lathe attachment used to machine elliptical
cones
MSC-100 B65-10168 02-05

CONNECTOR

Gage measures electrical connector pin
retention force
JPL-SC-071 B65-10034 02-03

Feed-through has polyterminal feature
M-FS-25 B65-10057 02-01

Cutter and stripper reduces coaxial cable
connection time
ARC-40 B65-10094 02-05

New nut and sleeve improve flared connections
M-FS-194 B65-10180 02-05

Inexpensive electrical connector is moisture
and corrosionproof
MSC-164 B65-10196 02-01

Improved solderless connector is easily
disconnected
JPL-SC-060 B65-10197 02-01

Electrical cable connector-clamp has smooth
exterior surface
MSC-154 B65-10201 02-05

CONTACT

Improved holder protects crystal during high
acceleration and impact
JPL-463 B65-10037 02-05

CONTAMINATION

Magnetic field controls carbon arc tail flame
MSC-139 B65-10108 02-01

Double gloves reduce contamination of dry box
atmosphere
LEWIS-211 B65-10117 02-03

CONTROL DEVICE

Knob linkage permits one-hand control of
several operations
MSC-30 B65-10022 02-05

Simple control device senses solar position
JPL-638 B65-10061 02-01

Pulsed plasma accelerator operates
repetitively without complex controls
LANGLEY-48 B65-10062 02-01

Variable frequency magnetic multivibrator
generates stable square-wave output
GSFC-AE-21 B65-10124 02-01

CONTROL SYSTEM

Bidirectional torque filter eliminates
backlash
GSFC-335 B65-10148 02-05

CONTROL VALVE

Flow control valve is independent of pressure
drop
JPL-W00-039 B65-10121 02-05

Improved fluid control valve extends diaphragm
life
JPL-345 B65-10147 02-05

CONVERTER

Dc to ac converter operates efficiently at low
input voltages
GSFC-130 B65-10178 02-01

COPPER SULFIDE

Crack detection method is safe in presence of
liquid oxygen
M-FS-236 B65-10107 02-03

CORROSION PREVENTION

Carbon-arc rod holder has long life, reduces
arc splatter
MSC-144 B65-10095 02-03

Galvanic corrosion reduced in aluminum
fabrications
M-FS-272 B65-10140 02-03

CORROSION RESISTANCE

Wide-angle sensor measures radiant heat energy
in corrosive atmospheres
M-FS-228 B65-10019 02-05

Inexpensive electrical connector is moisture
and corrosionproof
MSC-164 B65-10196 02-01

COUPLING

New coupling compensates for shaft
misalignment
NU-0013 B65-10077 02-05

Device disconnects several couplings
simultaneously
JPL-226 B65-10163 02-05

Quick-disconnect coupling safe transfer of
hazardous fluids
LEWIS-125 B65-10202 02-01

CRACK

Crack detection method is safe in presence of
liquid oxygen
M-FS-236 B65-10107 02-03

CROSS LINKING

Irradiation improves properties of an
aromatic polyester
LANGLEY-115 B65-10164 02-03

CRYOGENIC EQUIPMENT

Automatic thermal switch accelerates
cooling-down of cryogenic system
JPL-655 B65-10068 02-01

CRYOGENIC FLUID

Inert gas spraying device aids in repair of
hazardous systems
LEWIS-8B B65-10115 02-05

Quick-disconnect coupling safe transfer of
hazardous fluids
LEWIS-125 B65-10202 02-01

CRYOGENIC TEMPERATURE

Lightweight aluminum casting alloy is useful
at cryogenic temperatures
M-FS-267 B65-10092 02-03

CRYOSTAT

Apparatus permits flexure testing of specimens
at cryogenic temperatures

CRYSTAL

SUBJECT INDEX

M-FS-257	B65-10129	02-02	GSFC-252	B65-10048	02-01
CRYSTAL			DIELECTRICS		
Improved holder protects crystal during high acceleration and impact			Spherical electrode eliminates high-voltage breakdown		
JPL-463	B65-10037	02-05	LEWIS-155	B65-10139	02-01
FM oscillator uses tetrode transistor			DIFFUSION		
JPL-82	B65-10055	02-01	Fabrication method produces high-grade alumina crucibles		
Crystal measures short-term, large-magnitude forces			M-FS-216	B65-10078	02-05
JPL-77	B65-10187	02-01	DIGITAL COMMAND SYSTEM		
CRYSTALLOGRAPHY			Digital system accurately controls velocity of electromechanical drive		
Spherical model provides visual aid for cubic crystal study			GSFC-287	B65-10096	02-01
LEWIS-108	B65-10065	02-03	DIGITAL COMPUTER		
Rotating filters permit wide range of optical pyrometry			Logic redundancy improves digital system reliability		
LANGLEY-33	B65-10100	02-02	JPL-SC-069	B65-10025	02-01
CUBIC CRYSTAL			Instrument calibrates low gas-rate flowmeters		
Spherical model provides visual aid for cubic crystal study			MSC-134	B65-10137	02-01
LEWIS-108	B65-10065	02-03	DIGITAL DATA		
CURRENT DISTRIBUTION			Interferometer combines laser light source and digital counting system		
Simple circuit functions as frequency discriminator for PFM signals			MSC-151	B65-10161	02-01
GSFC-267	B65-10102	02-01	DIGITAL-TO-ANALOG CONVERTER		
CURVED SURFACE			Transistorized circuit clamps voltage with 0.1 percent error		
Device measures curved surface finish on gear teeth			GSFC-196	B65-10118	02-01
WOO-112	B65-10064	02-05	Pressure transducer system is force-balanced, has digital output		
CUTTING			M-FS-154	B65-10174	02-05
Cutter and stripper reduces coaxial cable connection time			DIMENSIONAL STABILITY		
ARC-40	B65-10094	02-05	Collapsible truss structure is automatically expandable		
CYLINDER			GSFC-265	B65-10126	02-05
Seal allows blind assembly and thermal expansion of components			DIODE		
NU-0005	B65-10053	02-05	Modification increases light output of injection-luminescent diodes		
			M-FS-192	B65-10006	02-01
D			Thermocompression bonding produces efficient surface-barrier diode		
DAMAGE			JPL-SC-066	B65-10007	02-05
Low-cost tool minimizes damage to O-rings during installation			Optical arrangement increases useful light output of semiconductor diodes		
MSC-140	B65-10116	02-05	JPL-SC-064	B65-10020	02-05
DENSITOMETER			Logarithmic amplifier uses field effect transistors		
Modified contour projector makes excellent contour densitometer			JPL-509	B65-10145	02-01
LANGLEY-93	B65-10084	02-02	DIOXIDE		
DENSITY MEASUREMENT			IR-transmission glasses formed from oxides of bismuth and tellurium		
Density trace made with computer printout			M-FS-279	B65-10190	02-03
GSFC-322	B65-10200	02-01	DIRECT CURRENT /DC/		
DESTRUCTIVE TESTING			Variable load automatically tests dc power supplies		
Force controlled solenoid drives microweld tester			GSFC-291	B65-10105	02-01
WOO-125	B65-10182	02-01	Rotor position sensor switches currents in brushless Dc motors		
DETECTION			GSFC-315	B65-10151	02-01
Transistor voltage comparator performs own sensing			Dc to ac converter operates efficiently at low input voltages		
GSFC-228	B65-10028	02-01	GSFC-130	B65-10178	02-01
DIAPHRAGM			DIRECTIONAL CONTROL		
Improved fluid control valve extends diaphragm life			System measures unidirectional forces, excludes extraneous forces		
JPL-345	B65-10147	02-05	LEWIS-170	B65-10154	02-05
DIE			DISCONNECT DEVICE		
Metal parts hydrosized by explosive force			Device disconnects several couplings simultaneously		
M-FS-289	B65-10170	02-05			
Hand tool bends component leads accurately					
M-FS-308	B65-10181	02-05			
DIELECTRIC MATERIAL					
Microparticle impact sensor measures energy directly					

SUBJECT INDEX

ELECTROMOTIVE FORCE

JPL-226 B65-10163 02-05

DISCRIMINATOR
Simple circuit functions as frequency discriminator for PFM signals
GSFC-267 B65-10102 02-01

DISK
Modified interelement spacing improves Yagi antenna array
LANGLEY-130 B65-10183 02-01

DISPLACEMENT
Seismic transducer measures small horizontal displacements
M-FS-81 B65-10029 02-05

Transducer senses displacements of panels subjected to vibration
ARC-37 B65-10085 02-01

Interferometer combines laser light source and digital counting system
MSC-151 B65-10161 02-01

DISPLAY SYSTEM
Illuminated display panel is easily changed
MSC-108 B65-10003 02-05

DRAG BALANCE
Device measures fluid drag on test vehicles
LANGLEY-34 B65-10195 02-01

DRAG MEASUREMENT
Device measures fluid drag on test vehicles
LANGLEY-34 B65-10195 02-01

DRILL
Rock bit requires no flushing medium to maintain drilling speed
JPL-W00-031 B65-10109 02-05

DRIVE
Stepping motor drive circuit designed for low power drain
GSFC-198 B65-10026 02-01

E

ELASTIC DEFORMATION
Testing device subjects elastic materials to biaxial deformations
JPL-616 B65-10189 02-03

ELASTIC PROPERTY
Valve designed with elastic seat
JPL-442 B65-10040 02-05

ELASTOMER
Compact assembly generates plastic foam, inflates flotation bag
LANGLEY-96 B65-10090 02-05

ELBOW
Spring loaded beaded cable makes efficient wire puller
W00-108 B65-10031 02-05

ELECTRIC CURRENT
Pickup device reads pressures from ports in rotating mechanisms
LEWIS-158 B65-10021 02-05

Laser beam transmits electric power
GSFC-293 B65-10158 02-01

ELECTRIC EQUIPMENT
Inexpensive electrical connector is moisture and corrosionproof
MSC-164 B65-10196 02-01

Electrical cable connector-clamp has smooth exterior surface
MSC-154 B65-10201 02-05

ELECTRIC LEAD
Hand tool bends component leads accurately
M-FS-308 B65-10181 02-05

ELECTRIC POTENTIAL
Density trace made with computer printout
GSFC-322 B65-10200 02-01

ELECTROCARDIOGRAM
Simulator produces physiological waveforms
MSC-94 B65-10091 02-01

Auxiliary circuit enables automatic monitoring of EKG'S
MSC-106 B65-10142 02-01

Digital-output cardiometer measures rapid changes in heartbeat rate
MSC-133 B65-10143 02-01

ELECTROCARDIOGRAPHY
Inexpensive, stable circuit measures heart rate
MSC-95 B65-10010 02-01

ELECTROCHEMICAL CELL
Apparatus measures swelling of membranes in electrochemical cells
GSFC-280 B65-10087 02-01

ELECTRODE
Modification increases light output of injection-luminescent diodes
M-FS-192 B65-10006 02-01

Improved conductive paste secures biomedical electrodes
MSC-107 B65-10015 02-03

Didymium compound improves nickel-cadmium cell
GSFC-295 B65-10083 02-03

Spherical electrode eliminates high-voltage breakdown
LEWIS-155 B65-10139 02-01

ELECTRODEPOSITION
Fresnel zone plate forms images at wavelengths below 1000 angstroms
GSFC-231 B65-10171 02-02

ELECTRODERMAL RESPONSE
Improved conductive paste secures biomedical electrodes
MSC-107 B65-10015 02-03

ELECTROMAGNET
Magnetic field controls carbon arc tail flame
MSC-139 B65-10108 02-01

ELECTROMAGNETIC SHIELDING
Transducer measures temperature differentials in presence of strong electromagnetic fields
ARC-27 B65-10089 02-01

ELECTROMECHANICAL DEVICE
Knob linkage permits one-hand control of several operations
MSC-30 B65-10022 02-05

Digital system accurately controls velocity of electromechanical drive
GSFC-287 B65-10096 02-01

Device measures fluid drag on test vehicles
LANGLEY-34 B65-10195 02-01

ELECTROMETER
Vibrating-membrane electrometer has high conversion gain
ARC-38 B65-10056 02-01

Simplified electrometer has excellent operating characteristics
JPL-413 B65-10125 02-01

ELECTROMOTIVE FORCE
Metal sheath improves thermocouple using graphite in one leg
NU-0011 B65-10051 02-01

ELECTRON BEAM

SUBJECT INDEX

ELECTRON BEAM

Tantalum cathode improves electron-beam evaporation of tantalum
JPL-W00-021 B65-10175 02-03

ELECTRON BOMBARDMENT

Multiple element soft X-ray source produces wide range of radiation
GSFC-286 B65-10082 02-02

ELECTRON DENSITY

Microwave technique measures plasma characteristics
LANGLEY-134 B65-10122 02-02

ELECTRON TUBE

Wire winding increases lifetime of oxide-coated cathodes
LEWIS-154 B65-10032 02-03

ELECTRONIC EQUIPMENT TESTING

Probe tests microweld strength
W00-118 B65-10111 02-05

Piezoresistive gage tests pin-connector sockets
JPL-675 B65-10128 02-01

ELECTRONIC MODULE

Use of tear ring permits repair of sealed module circuitry
M-FS-210 B65-10014 02-05

Electronic modules easily separated from heat sink
MSC-142 B65-10186 02-02

ELECTRONIC STRUCTURE

Screening technique makes reliable bond at room temperature
M-FS-227 B65-10004 02-03

ELECTROSTATIC SHIELDING

Improved magnetometer uses toroidal gating coil
GSFC-249 B65-10103 02-01

EMBRITTLMENT

New alloy brazes titanium to stainless steel
MSC-102 B65-10060 02-05

ENERGY CONVERSION

Laser beam transmits electric power
GSFC-293 B65-10158 02-01

ENGINEERING DEVELOPMENT

Modified contour projector makes excellent contour densitometer
LANGLEY-93 B65-10084 02-02

ENVIRONMENTAL CHAMBER

Double gloves reduce contamination of dry box atmosphere
LEWIS-211 B65-10117 02-03

EPOXY RESIN

Screening technique makes reliable bond at room temperature
M-FS-227 B65-10004 02-03

Aluminum alloys protected against stress-corrosion cracking
M-FS-235 B65-10172 02-03

Epoxy-resin patterns speed shell-molding of aluminum parts
M-FS-303 B65-10177 02-05

EQUILIBRIUM FLOW

Averaging probe reduces static-pressure sensing errors
LANGLEY-36 B65-10114 02-05

ERROR SIGNAL

Circuit detects errors in address currents for magnetic core arrays
M-FS-234 B65-10047 02-01

ETCHING

Electroless nickel resist used in alkali-etching of aluminum
GSFC-284 B65-10162 02-03

Fresnel zone plate forms images at wavelengths below 1000 angstroms
GSFC-231 B65-10171 02-02

EVAPORATION

Tantalum cathode improves electron-beam evaporation of tantalum
JPL-W00-021 B65-10175 02-03

EXHAUST

Magnetic field controls carbon arc tail flame
MSC-139 B65-10108 02-01

EXOTHERMIC REACTION

Nitrogen dioxide produced by self-sustained pyrolysis of nitrous oxide
LANGLEY-32 B65-10074 02-05

EXPANDABLE STRUCTURE

Collapsible truss structure is automatically expandable
GSFC-265 B65-10126 02-05

EXPLOSIVE

Explosives actuate nonmagnetic indexing device
GSFC-237 B65-10017 02-05

EXPLOSIVE DEVICE

Splice plate design assures structural separation by mild explosive
MSC-137 B65-10166 02-05

EXPLOSIVE FORMING

Metal parts hydrosized by explosive force
M-FS-289 B65-10170 02-05

EXTRUSION

Integral ribs formed in metal panels by cold-press extrusion
M-FS-230 B65-10141 02-05

EYE MOVEMENT

Photoelectric sensor output controlled by eyeball movements
M-FS-274 B65-10079 02-01

F

FASTENER

Fastener provides cooling and compensates for thermal expansion
NU-0003 B65-10038 02-05

Low-cost tool minimizes damage to O-rings during installation
MSC-140 B65-10116 02-05

Coiled spring makes self-locking device for threaded fasteners
MSC-149 B65-10135 02-05

Galvanic corrosion reduced in aluminum fabrications
M-FS-272 B65-10140 02-03

FATIGUE

Apparatus facilitates pressure-testing of metal tubing
LEWIS-174 B65-10131 02-05

FATIGUE TESTING MACHINE

Apparatus permits flexure testing of specimens at cryogenic temperatures
M-FS-257 B65-10129 02-02

FEEDBACK CONTROL SYSTEM

Feedback oscillator functions as low-level pulse stretcher
GSFC-261 B65-10069 02-01

FEEDING DEVICE

Tension is servo controlled in film advance system
LANGLEY-54 B65-10075 02-05

SUBJECT INDEX

FREQUENCY SYNTHESIS

FIELD EFFECT TRANSISTOR /FET/
 Logarithmic amplifier uses field effect transistors
 JPL-509 B65-10145 02-01

FILAMENT WINDING
 Fiberglass parts cured during filament winding eliminates oven, saves time
 M-FS-14 B65-10088 02-03

FILM
 Tension is servo controlled in film advance system
 LANGLEY-54 B65-10075 02-05

System selects framing rate for spectrograph camera
 LANGLEY-55 B65-10086 02-01

FILTER
 Rotating filters permit wide range of optical pyrometry
 LANGLEY-33 B65-10100 02-02

FLAME
 Magnetic field controls carbon arc tail flame
 MSC-139 B65-10108 02-01

FLAT SURFACE
 Sensitive level sensor made with spirit level, gives electrical output
 LANGLEY-49 B65-10067 02-01

FLAW
 Apparatus facilitates pressure-testing of metal tubing
 LEWIS-174 B65-10131 02-05

FLAW DETECTION
 Crack detection method is safe in presence of liquid oxygen
 M-FS-236 B65-10107 02-03

FLEXIBILITY
 Adhesive for vacuum environments resists shock and vibration
 MSC-56 B65-10016 02-03

Extendible column can be stowed on drum
 JPL-686 B65-10191 02-05

FLEXURE
 Flexure support system protects thermally and dynamically loaded models
 LANGLEY-39 B65-10042 02-05

FLOW CHARACTERISTICS
 Probe measures characteristics of hot gas stream
 M-FS-240 B65-10133 02-02

FLOW MEASUREMENT
 Instrument calibrates low gas-rate flowmeters
 MSC-134 B65-10137 02-01

FLOW METER
 Instrument calibrates low gas-rate flowmeters
 MSC-134 B65-10137 02-01

FLOW REGULATOR
 Flow control valve is independent of pressure drop
 JPL-W00-039 B65-10121 02-05

FLUID
 Improved fluid control valve extends diaphragm life
 JPL-345 B65-10147 02-05

FLUID POWER
 Fluid-pressure measurement apparatus uses short-length manometer tubes
 LEWIS-28 B65-10027 02-05

FLUOROCARBON
 Low-cost seal compensates for surface irregularities
 NU-0016 B65-10160 02-05

Electronic modules easily separated from heat sink
 MSC-142 B65-10186 02-02

FLUX
 Improved magnetometer uses toroidal gating coil
 GSFC-249 B65-10103 02-01

FLUX DENSITY
 Computer programs simplify optical system analysis
 GSFC-306 B65-10093 02-01

FOAMED MATERIAL
 Porous ceramic cures at moderate temperatures, is good heat insulator
 GSFC-162 B65-10058 02-03

Compact assembly generates plastic foam, inflates flotation bag
 LANGLEY-96 B65-10090 02-05

FOIL
 Ceramic-coated boat is chemically inert, provides good heat transfer
 LANGLEY-90 B65-10063 02-05

FORCE
 System measures unidirectional forces, excludes extraneous forces
 LEWIS-170 B65-10154 02-05

FRAME
 Simple circuit positions film frames in projector
 JPL-508 B65-10132 02-02

FREE STREAM
 Averaging probe reduces static-pressure sensing errors
 LANGLEY-36 B65-10114 02-05

FREQUENCY CONTROL
 FM oscillator uses tetrode transistor
 JPL-82 B65-10055 02-01

Variable frequency transistor inverters use multiple core transformers
 variable frequency transistor inverters use multiple core transformers
 GSFC-183 B65-10119 02-01

Frequency offset in linear FM/CW transponder eliminates clutter
 M-FS-249 B65-10146 02-01

FREQUENCY CONVERTER
 Circuit converts AM signals to FM for magnetic recording
 GSFC-227 B65-10001 02-01

Traveling-wave tube circuit simplifies microwave relay
 GSFC-299 B65-10127 02-01

FREQUENCY DIVIDER
 Unijunction frequency divider is free of backward loading
 JPL-W00-010 B65-10112 02-01

FREQUENCY MEASUREMENT
 Nonresonant support facilitates vibration testing of structures
 M-FS-224 B65-10039 02-05

FREQUENCY MODULATION
 Tunnel-diode circuit features zero-level clipping
 GSFC-241 B65-10002 02-01

FREQUENCY MULTIPLIER
 Phase detector circuit synthesizes own reference signal
 M-FS-247 B65-10080 02-01

FREQUENCY SYNTHESIS
 Phase shift frequency synthesizer is efficient, small in size

FRESNEL REFLECTOR

SUBJECT INDEX

M-FS-250 B65-10169 02-01

FRESNEL REFLECTOR
Wide-aperture solar energy collector is light in weight
JPL-SC-055 B65-10046 02-02

FRITIONLESS ENVIRONMENT
Frictionless bearing uses permanent magnets
MSC-32 B65-10155 02-05

FUEL CELL
Fuel cell serves as oxygen level detector
JPL-SC-072 B65-10066 02-01

FUNCTION GENERATOR
Zener diode function generator requires no external reference voltage
JPL-33 B65-10013 02-01

FUSE
Splice plate design assures structural separation by mild explosive
MSC-137 B65-10166 02-05

G

GALLIUM ARSENIDE
Thermocompression bonding produces efficient surface-barrier diode
JPL-SC-066 B65-10007 02-05

Laser beam transmits electric power
GSFC-293 B65-10158 02-01

GALVANOMETER
Light-sensitive potentiometer measures product of two variables
GSFC-240 B65-10076 02-01

GAS
Pulsed plasma accelerator operates repetitively without complex controls
LANGLEY-48 B65-10062 02-01

Inert gas spraying device aids in repair of hazardous systems
LEWIS-8B B65-10115 02-05

GAS FLOW
Instrument calibrates low gas-rate flowmeters
MSC-134 B65-10137 02-01

GAS LUBRICATED BEARING
Slit feeds reduce unbalanced torques in gas-lubricated bearings
JPL-264 B65-10099 02-05

GAS STREAM
Probe measures characteristics of hot gas stream
M-FS-240 B65-10133 02-02

Instrument calibrates low gas-rate flowmeters
MSC-134 B65-10137 02-01

Internal cooling increases range of immersion-type temperature probe
LEWIS-171 B65-10157 02-02

GASOLINE
Inert gas spraying device aids in repair of hazardous systems
LEWIS-8B B65-10115 02-05

GEAR
Shock absorber protects motive components against overloads
WOO-092 B65-10008 02-05

Bidirectional torque filter eliminates backlash
GSFC-335 B65-10148 02-05

GEAR TOOTH
Device measures curved surface finish on gear teeth
WOO-112 B65-10064 02-05

GEOGRAPHY
Density trace made with computer printout
GSFC-322 B65-10200 02-01

GLASS
IR-transmission glasses formed from oxides of bismuth and tellurium
M-FS-279 B65-10190 02-03

GLASS FIBER
Flexible curtain shields equipment from intense heat fluxes
M-FS-48 B65-10044 02-03

Fiberglass parts cured during filament winding eliminates oven, saves time
M-FS-14 B65-10088 02-03

GOLD ALLOY
Thermocompression bonding produces efficient surface-barrier diode
JPL-SC-066 B65-10007 02-05

GRAPH
Simple scale interpolator facilitates reading of graphs
LANGLEY-88 B65-10070 02-05

GRAPHITE
Metal sheath improves thermocouple using graphite in one leg
NU-0011 B65-10051 02-01

GRATING
Simple optical system used to align spectrograph
LANGLEY-92 B65-10071 02-02

GREASE
Lightweight load support serves as vibration damper
JPL-661 B65-10144 02-05

Electronic modules easily separated from heat sink
MSC-142 B65-10186 02-02

GRID
Forming blocks speed production of strain gage grids
LEWIS-182 B65-10009 02-05

GYROSCOPE
Slit feeds reduce unbalanced torques in gas-lubricated bearings
JPL-264 B65-10099 02-05

H

HEART RATE
Inexpensive, stable circuit measures heart rate
MSC-95 B65-10010 02-01

Digital-output cardiometer measures rapid changes in heartbeat rate
MSC-133 B65-10143 02-01

HEAT CONTENT
Probe measures characteristics of hot gas stream
M-FS-240 B65-10133 02-02

HEAT EXCHANGER
Cantilever springs maintain tension in thermally expanded wires
LEWIS-136 B65-10149 02-05

HEAT SINK
Automatic thermal switch accelerates cooling-down of cryogenic system
JPL-655 B65-10068 02-01

Refractory oxides evaluated for high-temperature use
LANGLEY-121 B65-10167 02-03

Electronic modules easily separated from heat sink

SUBJECT INDEX

INTERFACE

MSC-142	B65-10186	02-02	auxiliary circuit	B65-10018	02-01
HEAT TRANSFER			ILLUMINATION		
Adhesive for vacuum environments resists shock and vibration			Illuminated display panel is easily changed		
MSC-56	B65-10016	02-03	MSC-108	B65-10003	02-05
Thermistor connector assembly increases accuracy of measurements			IMAGE		
LANGLEY-62	B65-10045	02-01	Fresnel zone plate forms images at wavelengths below 1000 angstroms	B65-10171	02-02
Internal cooling increases range of immersion-type temperature probe			IMPACT ACCELERATION		
LEWIS-171	B65-10157	02-02	Improved holder protects crystal during high acceleration and impact	B65-10037	02-05
HEATER			INCLINATION		
Wire winding increases lifetime of oxide-coated cathodes			Averaging probe reduces static-pressure sensing errors	B65-10114	02-05
LEWIS-154	B65-10032	02-03	LANGLEY-36		
Efficient thin film heating element takes minimum space			INDUCTION HEATING EQUIPMENT		
GSFC-289	B65-10123	02-01	Refractory metal shielding /insulation/ increases operating range of induction furnace	B65-10188	02-02
Cantilever springs maintain tension in thermally expanded wires			INERTIA MOMENT		
LEWIS-136	B65-10149	02-05	Device enables measurement of moments of inertia about three axes	B65-10176	02-05
HEATING EQUIPMENT			INFORMATION PROCESSING		
Refractory metal shielding /insulation/ increases operating range of induction furnace			Superconductor magnets used for stagger-tuning traveling-wave maser	B65-10165	02-01
LEWIS-202	B65-10188	02-02	GSFC-292		
HELICAL WINDING			INFRARED RADIATION		
Helical coaxial-resonator makes excellent RF filter			IR-transmission glasses formed from oxides of bismuth and tellurium	B65-10190	02-03
GSFC-243	B65-10012	02-01	M-FS-279		
HERMETIC SEAL			INORGANIC COMPOUND		
Mouthpiece adapter for pipettes protects mouth from harmful liquids			Inorganic paint is durable, fireproof, easy to apply	B65-10156	02-03
LANGLEY-47	B65-10043	02-03	GSFC-366		
HIGH TEMPERATURE ENVIRONMENT			INPUT		
Fastener provides cooling and compensates for thermal expansion			Stepping motor drive circuit designed for low power drain	B65-10026	02-01
NU-0003	B65-10038	02-05	GSFC-198		
Refractory oxides evaluated for high-temperature use			Transistor voltage comparator performs own sensing		
LANGLEY-121	B65-10167	02-03	GSFC-228	B65-10028	02-01
HOLDER			Photoelectric semiconductor switch operates with low level inputs		
Improved holder protects crystal during high acceleration and impact			JPL-SC-068	B65-10033	02-01
JPL-463	B65-10037	02-05	INSPECTION		
Carbon-arc rod holder has long life, reduces arc splatter			Crack detection method is safe in presence of liquid oxygen		
MSC-144	B65-10095	02-03	M-FS-236	B65-10107	02-03
HONEYCOMB			INSTALLATION		
Apparatus permits flexure testing of specimens at cryogenic temperatures			Low-cost tool minimizes damage to O-rings during installation	B65-10116	02-05
M-FS-257	B65-10129	02-02	MSC-140		
HOT GAS			INSULATION		
Probe measures characteristics of hot gas stream			Spherical electrode eliminates high-voltage breakdown	B65-10139	02-01
M-FS-240	B65-10133	02-02	LEWIS-155		
HYDRAULIC ACTUATOR			Refractory oxides evaluated for high-temperature use		
Device disconnects several couplings simultaneously			LANGLEY-121	B65-10167	02-03
JPL-226	B65-10163	02-05	INTEGRATOR		
HYDRAULIC SYSTEM			Solid-state switching used to speed up capacitive integrator		
New nut and sleeve improve flared connections			LANGLEY-104	B65-10159	02-01
M-FS-194	B65-10180	02-05	INTERFACE		
HYDROSTATIC PRESSURE			Seal allows blind assembly and thermal expansion of components		
Nonresonant support facilitates vibration testing of structures			NU-0005	B65-10053	02-05
M-FS-224	B65-10039	02-05	IGNITION SYSTEM		
Carbon arc ignition improved by simple					

INTERFEROMETER

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INTERFEROMETER

Interferometer combines laser light source
and digital counting system
MSC-151 B65-10161 02-01

INTERPOLATION

Simple scale interpolator facilitates
reading of graphs
LANGLEY-88 B65-10070 02-05

ITERATION

Computer modification reduces time of
performing iterative division
M-FS-166 B65-10005 02-01

J

JIG

Jig and fixture aid fabrication of tungsten
rivets
LEWIS-185 B65-10101 02-05

Spiral heater coils hand-formed with fixture
LEWIS-208 B65-10192 02-05

JOINT

Splice plate design assures structural
separation by mild explosive
MSC-137 B65-10166 02-05

L

LABORATORY APPARATUS

Ceramic-coated boat is chemically inert,
provides good heat transfer
LANGLEY-90 B65-10063 02-05

LAMINATE

Flexible curtain shields equipment from
intense heat fluxes
M-FS-48 B65-10044 02-03

LAMINATED MATERIAL

Peel resistance of adhesive bonds accurately
measured
GSFC-320 B65-10173 02-03

LASER

Modification increases light output of
injection-luminescent diodes
M-FS-192 B65-10006 02-01

Laser beam transmits electric power
GSFC-293 B65-10158 02-01

Interferometer combines laser light source
and digital counting system
MSC-151 B65-10161 02-01

LATHE

Metal bellows custom-fabricated from tubing
LEWIS-192 B65-10150 02-05

Lathe attachment used to machine elliptical
cones
MSC-100 B65-10168 02-05

Self-aligning fixture used in lathe chuck jaw
refacing
FRC-21 B65-10198 02-05

LENS

Optical arrangement increases useful light
output of semiconductor diodes
JPL-SC-064 B65-10020 02-05

LIGHT EMISSION

Optical arrangement increases useful light
output of semiconductor diodes
JPL-SC-064 B65-10020 02-05

LIGHT SOURCE

Modification increases light output of
injection-luminescent diodes
M-FS-192 B65-10006 02-01

Simple optical system used to align
spectrograph
LANGLEY-92 B65-10071 02-02

Instrument calibrates low gas-rate flowmeters
MSC-134 B65-10137 02-01

Interferometer combines laser light source
and digital counting system
MSC-151 B65-10161 02-01

LIGHTING

Illuminated display panel is easily changed
MSC-108 B65-10003 02-05

LIMITER

Tunnel-diode circuit features zero-level
clipping
GSFC-241 B65-10002 02-01

LINEAR CIRCUIT

Simple circuit functions as frequency
discriminator for ,pfm signals
GSFC-267 B65-10102 02-01

LINEAR SYSTEM

Interferometer combines laser light source
and digital counting system
MSC-151 B65-10161 02-01

LINEARITY

Circuit reduces distortion of FM modulator
GSFC-257 B65-10152 02-01

LIQUID HELIUM

Automatic thermal switch accelerates
cooling-down of cryogenic system
JPL-655 B65-10068 02-01

LIQUID OXYGEN /LOX/

Crack detection method is safe in presence of
liquid oxygen
M-FS-236 B65-10107 02-03

LOAD FACTOR

Circuit improvement produces monostable
multivibrator with load-carrying capability
GSFC-34A B65-10011 02-01

Variable load automatically tests dc power
supplies
GSFC-291 B65-10105 02-01

LOGARITHM

Logarithmic amplifier uses field effect
transistors
JPL-509 B65-10145 02-01

LOGIC CIRCUIT

Logic circuit exhibits optimum performance
LANGLEY-129 B65-10193 02-01

LUBRICATION SYSTEM

Miniature bearings lubricated by sonic
dispersion method
M-FS-202 B65-10106 02-03

M

MACHINING

Lathe attachment used to machine elliptical
cones
MSC-100 B65-10168 02-05

MAGNET

Frictionless bearing uses permanent magnets
MSC-32 B65-10155 02-05

MAGNETIC CIRCUIT

Variable frequency transistor inverters use
multiple core transformers
variable frequency transistor inverters use
multiple core transformers
GSFC-183 B65-10119 02-01

MAGNETIC CORE

Circuit detects errors in address currents for
magnetic core arrays
M-FS-234 B65-10047 02-01

Improved magnetometer uses toroidal gating
coil
GSFC-249 B65-10103 02-01

SUBJECT INDEX

MICROWAVE CIRCUIT

Analog-to-digital converter has increased reliability and reduced power consumption GSFC-246 B65-10194 02-01	LANGLEY-49 B65-10067 02-01
MAGNETIC FIELD Explosives actuate nonmagnetic indexing device GSFC-237 B65-10017 02-05	System measures angular displacement without contact LANGLEY-46 B65-10073 02-01
Magnetic field controls carbon arc tail flame MSC-139 B65-10108 02-01	Transducer senses displacements of panels subjected to vibration ARC-37 B65-10085 02-01
High permeability semiconductors permit close-tolerance soldering GSFC-319 B65-10134 02-05	Apparatus measures swelling of membranes in electrochemical cells GSFC-280 B65-10087 02-01
Density trace made with computer printout GSFC-322 B65-10200 02-01	Microwave technique measures plasma characteristics LANGLEY-134 B65-10122 02-02
MAGNETIC FIELD COIL Magnetic field test coils are temperature compensated GSFC-294 B65-10081 02-02	System measures unidirectional forces, excludes extraneous forces LEWIS-170 B65-10154 02-05
MAGNETIC INSTRUMENT Variable frequency magnetic multivibrator generates stable square-wave output GSFC-AE-21 B65-10124 02-01	Device enables measurement of moments of inertia about three axes GSFC-49 B65-10176 02-05
MAGNETIC TAPE RECORDER Circuit converts AM signals to FM for magnetic recording GSFC-227 B65-10001 02-01	MECHANICAL SYSTEM Multiple test tubes stirred mechanically ARC-42 B65-10120 02-01
MAGNETOHYDRODYNAMIC GENERATOR Wire winding increases lifetime of oxide-coated cathodes LEWIS-154 B65-10032 02-03	MEMORY STORAGE UNIT Circuit detects errors in address currents for magnetic core arrays M-FS-234 B65-10047 02-01
MAGNETOMETER Improved magnetometer uses toroidal gating coil GSFC-249 B65-10103 02-01	METAL Metal sheath improves thermocouple using graphite in one leg NU-0011 B65-10051 02-01
MAINTENANCE Magnetic field controls carbon arc tail flame MSC-139 B65-10108 02-01	Titanium treatment improves brazed joints MSC-127 B65-10153 02-05
MANDREL Collar positions strip stock used to form coil on mandrel LEWIS-198 B65-10130 02-05	METAL FORMING Integral ribs formed in metal panels by cold-press extrusion M-FS-230 B65-10141 02-05
Metal bellows custom-fabricated from tubing LEWIS-192 B65-10150 02-05	Metal parts hydrosized by explosive force M-FS-289 B65-10170 02-05
MANOMETER Fluid-pressure measurement apparatus uses short-length manometer tubes LEWIS-28 B65-10027 02-05	METAL WORKING Jig and fixture aid fabrication of tungsten rivets LEWIS-185 B65-10101 02-05
MANUAL CONTROL Knob linkage permits one-hand control of several operations MSC-30 B65-10022 02-05	Collar positions strip stock used to form coil on mandrel LEWIS-198 B65-10130 02-05
MASKING Reusable neoprene jacket protects parts for chemical milling WOO-071 B65-10179 02-03	Lathe attachment used to machine elliptical cones MSC-100 B65-10168 02-05
MEASURING APPARATUS Gage measures electrical connector pin retention force JPL-SC-071 B65-10034 02-03	METALLURGY Rotating filters permit wide range of optical pyrometry LANGLEY-33 B65-10100 02-02
Ionization vacuum gage starts quickly, is unaffected by spurious currents JPL-304 B65-10036 02-02	MICROELECTRONICS Logic circuit exhibits optimum performance LANGLEY-129 B65-10193 02-01
Metal diaphragm used to calibrate miniature transducers M-FS-207 B65-10059 02-01	MICROFILM Library of documents compressed into lap-held display kit MSC-125 B65-10030 02-01
Device measures curved surface finish on gear teeth WOO-112 B65-10064 02-05	MICROMETER Apparatus measures swelling of membranes in electrochemical cells GSFC-280 B65-10087 02-01
Sensitive level sensor made with spirit level, gives electrical output	MICROWAVE CIRCUIT Superconductor magnets used for stagger-tuning traveling-wave maser GSFC-292 B65-10165 02-01

MICROWAVE TRANSMISSION

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MICROWAVE TRANSMISSION

Traveling-wave tube circuit simplifies
microwave relay
GSFC-299 B65-10127 02-01

MINIATURE ELECTRONIC EQUIPMENT

Metal diaphragm used to calibrate miniature
transducers
M-FS-207 B65-10059 02-01

MIRROR

Light-sensitive potentiometer measures
product of two variables
GSFC-240 B65-10076 02-01

MOLDING MATERIAL

Porous ceramic cures at moderate temperatures,
is good heat insulator
GSFC-162 B65-10058 02-03

MONITOR

Auxiliary circuit enables automatic monitoring
of EKG'S
MSC-106 B65-10142 02-01

MONOCHROMATIC RADIATION

Computer programs simplify optical system
analysis
GSFC-306 B65-10093 02-01

MONOMOLECULAR LAYER

Miniature bearings lubricated by sonic
dispersion method
M-FS-202 B65-10106 02-03

MOTOR SYSTEM

Rotor position sensor switches currents in
brushless dc motors
GSFC-315 B65-10151 02-01

MULTIPLIER

Variable load automatically tests dc power
supplies
GSFC-291 B65-10105 02-01

MULTIVIBRATOR

Circuit improvement produces monostable
multivibrator with load-carrying capability
GSFC-34A B65-10011 02-01

Variable frequency transistor inverters use
multiple core transformers
GSFC-183 B65-10119 02-01

Variable frequency magnetic multivibrator
generates stable square-wave output
GSFC-AE-21 B65-10124 02-01

Digital-output cardiometer measures rapid
changes in heartbeat rate
MSC-133 B65-10143 02-01

N

NAVIGATION AID

Improved magnetometer uses toroidal gating
coil
GSFC-249 B65-10103 02-01

NEOPRENE

Reusable neoprene jacket protects parts for
chemical milling
WOO-071 B65-10179 02-03

NICKEL-CADMIUM BATTERY

Didymium compound improves nickel-cadmium
cell
GSFC-295 B65-10083 02-03

NICKEL PLATING

Electroless nickel resist used in alkali-
etching of aluminum
GSFC-284 B65-10162 02-03

NITROGEN COMPOUND

Nitrogen dioxide produced by self-sustained
pyrolysis of nitrous oxide

LANGLEY-32 B65-10074 02-05

NONDESTRUCTIVE TESTING

Force controlled solenoid drives microweld
tester
WOO-125 B65-10182 02-01

NONLINEARITY

Digital-output cardiometer measures rapid
changes in heartbeat rate
MSC-133 B65-10143 02-01

NOZZLE FLOW

Flow control valve is independent of pressure
drop
JPL-WOO-039 B65-10121 02-05

O

OMNIDIRECTIONAL ANTENNA

Lightweight load support serves as vibration
damper
JPL-661 B65-10144 02-05

OPTICAL EQUIPMENT

Computer programs simplify optical system
analysis
GSFC-306 B65-10093 02-01

OPTICAL INSTRUMENT

Carbon-arc rod holder has long life, reduces
arc splatter
MSC-144 B65-10095 02-03

OPTICAL REFLECTIVITY

System measures angular displacement without
contact
LANGLEY-46 B65-10073 02-01

OPTICS

Simple optical system used to align
spectrograph
LANGLEY-92 B65-10071 02-02

System measures angular displacement without
contact
LANGLEY-46 B65-10073 02-01

ORIFICE

Averaging probe reduces static-pressure
sensing errors
LANGLEY-36 B65-10114 02-05

OSCILLATION

Device enables measurement of moments of
inertia about three axes
GSFC-49 B65-10176 02-05

OSCILLATION FREQUENCY

Circuit converts AM signals to FM for
magnetic recording
GSFC-227 B65-10001 02-01

OSCILLATOR

FM oscillator uses tetrode transistor
JPL-82 B65-10055 02-01

Feedback oscillator functions as low-level
pulse stretcher
GSFC-261 B65-10069 02-01

Unijunction frequency divider is free of
backward loading
JPL-WOO-010 B65-10112 02-01

Variable frequency transistor inverters use
multiple core transformers
variable frequency transistor inverters use
multiple core transformers
GSFC-183 B65-10119 02-01

Circuit reduces distortion of FM modulator
GSFC-257 B65-10152 02-01

Dc to ac converter operates efficiently at low
input voltages
GSFC-130 B65-10178 02-01

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PLASTIC MATERIAL

OUTPUT
Stepping motor drive circuit designed for low power drain
GSFC-198 B65-10026 02-01

Digital-output cardiometer measures rapid changes in heartbeat rate
MSC-133 B65-10143 02-01

OXYGEN DETECTOR
Fuel cell serves as oxygen level detector
JPL-SC-072 B65-10066 02-01

P

PACKAGING
Use of tear ring permits repair of sealed module circuitry
M-FS-210 B65-10014 02-05

Library of documents compressed into lap-held display kit
MSC-125 B65-10030 02-01

PAINT
Inorganic paint is durable, fireproof, easy to apply
GSFC-366 B65-10156 02-03

Aluminum alloys protected against stress-corrosion cracking
M-FS-235 B65-10172 02-03

PANEL
Transducer senses displacements of panels subjected to vibration
ARC-37 B65-10085 02-01

Galvanic corrosion reduced in aluminum fabrications
M-FS-272 B65-10140 02-03

Integral ribs formed in metal panels by cold-press extrusion
M-FS-230 B65-10141 02-05

PARABOLOIDAL MIRROR
Wide-aperture solar energy collector is light in weight
JPL-SC-055 B65-10046 02-02

PARTICLE DETECTOR
Microparticle impact sensor measures energy directly
GSFC-252 B65-10048 02-01

PARTICLE MASS
Microparticle impact sensor measures energy directly
GSFC-252 B65-10048 02-01

PENDULUM
Seismic transducer measures small horizontal displacements
M-FS-81 B65-10029 02-05

PENDULUM APPARATUS
Device enables measurement of moments of inertia about three axes
GSFC-49 B65-10176 02-05

PHASE DETECTOR
Phase detector circuit synthesizes own reference signal
M-FS-247 B65-10080 02-01

PHASE SHIFT
Phase shift frequency synthesizer is efficient, small in size
M-FS-250 B65-10169 02-01

PHOTOCONDUCTOR
Light-sensitive potentiometer measures product of two variables
GSFC-240 B65-10076 02-01

PHOTODIODE
Simple circuit positions film frames in projector

JPL-508 B65-10132 02-02

Instrument calibrates low gas-rate flowmeters
MSC-134 B65-10137 02-01

Laser beam transmits electric power
GSFC-293 B65-10158 02-01

PHOTOELECTRIC APPARATUS
Photoelectric semiconductor switch operates with low level inputs
JPL-SC-068 B65-10033 02-01

PHOTOELECTRIC CELL
Sensitive level sensor made with spirit level, gives electrical output
LANGLEY-49 B65-10067 02-01

PHOTOGRAPHIC APPARATUS
Illuminated display panel is easily changed
MSC-108 B65-10003 02-05

Nulling pyrometer uses Kerr cell shutter for fast responses
NU-0010 B65-10050 02-01

Rotating filters permit wide range of optical pyrometry
LANGLEY-33 B65-10100 02-02

Simple circuit positions film frames in projector
JPL-508 B65-10132 02-02

PHOTOMULTIPLIER
System selects framing rate for spectrograph camera
LANGLEY-55 B65-10086 02-01

PIEZOELECTRIC CRYSTAL
Piezoresistive gage tests pin-connector sockets
JPL-675 B65-10128 02-01

Crystal measures short-term, large-magnitude forces
JPL-77 B65-10187 02-01

PIEZORESISTIVE DEVICE
Miniature stress transducer has directional capability
JPL-591 B65-10023 02-01

PIPE
Spring loaded beaded cable makes efficient wire puller
WOO-108 B65-10031 02-05

PLASMA
Microwave technique measures plasma characteristics
LANGLEY-134 B65-10122 02-02

PLASMA ACCELERATOR
Pulsed plasma accelerator operates repetitively without complex controls
LANGLEY-48 B65-10062 02-01

PLASMA JET
Carbon arc ignition improved by simple auxiliary circuit
MSC-103 B65-10018 02-01

PLASTIC
Improved holder protects crystal during high acceleration and impact
JPL-463 B65-10037 02-05

Epoxy-resin patterns speed shell-molding of aluminum parts
M-FS-303 B65-10177 02-05

PLASTIC FILM
Thermistor connector assembly increases accuracy of measurements
LANGLEY-62 B65-10045 02-01

PLASTIC MATERIAL
Illuminated display panel is easily changed

PLATE

SUBJECT INDEX

MSC-108	B65-10003	02-05	Variable load automatically tests dc power supplies	GSFC-291	B65-10105	02-01		
Vapor pressure measured with inflatable plastic bag	GSFC-281	B65-10136	02-03	Dc to ac converter operates efficiently at low input voltages	GSFC-130	B65-10178	02-01	
Inexpensive electrical connector is moisture and corrosionproof	MSC-164	B65-10196	02-01	Modular thermoelectric cell is easily packaged in various arrays	GSFC-339	B65-10199	02-01	
PLATE			POWER TRANSMISSION					
Splice plate design assures structural separation by mild explosive	MSC-137	B65-10166	02-05	Laser beam transmits electric power	GSFC-293	B65-10158	02-01	
PLENUM CHAMBER			PREAMPLIFIER					
Averaging probe reduces static-pressure sensing errors	LANGLEY-36	B65-10114	02-05	Auxiliary circuit enables automatic monitoring of EKG*S	MSC-106	B65-10142	02-01	
PLOTTING INSTRUMENT			PRECIPITATION					
Variable load automatically tests dc power supplies	GSFC-291	B65-10105	02-01	Crack detection method is safe in presence of liquid oxygen	M-FS-236	B65-10107	02-03	
POLARIZATION			PRESSURE					
Nulling pyrometer uses Kerr cell shutter for fast responses	NU-0010	B65-10050	02-01	Pulsed plasma accelerator operates repetitively without complex controls	LANGLEY-48	B65-10062	02-01	
Magnetic field controls carbon arc tail flame	MSC-139	B65-10108	02-01	PRESSURE APPARATUS				
POLYAMIDE			Apparatus facilitates pressure-testing of metal tubing					
Aluminum alloys protected against stress-corrosion cracking	M-FS-235	B65-10172	02-03	LEWIS-174	B65-10131	02-05		
POLYESTER			PRESSURE GAUGE					
Irradiation improves properties of an aromatic polyester	LANGLEY-115	B65-10164	02-03	Pickup device reads pressures from ports in rotating mechanisms	LEWIS-158	B65-10021	02-05	
POLYMER			PRESSURE GRADIENT					
Low-cost seal compensates for surface irregularities	NU-0016	B65-10160	02-05	Density trace made with computer printout	GSFC-322	B65-10200	02-01	
Electronic modules easily separated from heat sink	MSC-142	B65-10186	02-02	PRESSURE MEASUREMENT				
POLYMETHYL METHACRYLATE			Fluid-pressure measurement apparatus uses short-length manometer tubes					
Spherical model provides visual aid for cubic crystal study	LEWIS-108	B65-10065	02-03	LEWIS-28	B65-10027	02-05		
POROSITY			Apparatus measures swelling of membranes in electrochemical cells					
Apparatus facilitates pressure-testing of metal tubing	LEWIS-174	B65-10131	02-05	GSFC-280	B65-10087	02-01		
POSITIONING EQUIPMENT			Averaging probe reduces static-pressure sensing errors					
Screw locking cups quickly and neatly crimped	NU-0009	B65-10049	02-05	LANGLEY-36	B65-10114	02-05		
POTASSIUM SILICATE			Vapor pressure measured with inflatable plastic bag					
Inorganic paint is durable, fireproof, easy to apply	GSFC-366	B65-10156	02-03	GSFC-281	B65-10136	02-03		
POTENTIOMETER			PRESSURE RECORDER					
Tension is servo controlled in film advance system	LANGLEY-54	B65-10075	02-05	Pressure transducer system is force-balanced, has digital output	M-FS-154	B65-10174	02-05	
Light-sensitive potentiometer measures product of two variables	GSFC-240	B65-10076	02-01	PRESSURE REGULATOR				
POWER SUPPLY			Pressure transducer system is force-balanced, has digital output					
Zener diode is starter for transistor-regulated power supply	NU-0015	B65-10052	02-01	M-FS-154	B65-10174	02-05		
Variable voltage supply uses zener diode as reference	GSFC-262	B65-10097	02-01	PRESSURE TRANSDUCER				
			Metal diaphragm used to calibrate miniature transducers					
			M-FS-207				B65-10059	02-01
			Averaging probe reduces static-pressure sensing errors					
			LANGLEY-36				B65-10114	02-05
			Pressure transducer system is force-balanced, has digital output					
			M-FS-154				B65-10174	02-05
			Pressure sensor responds only to shock wave					
			M-FS-238				B65-10184	02-01

SUBJECT INDEX

RESISTOR

PRINTED CIRCUIT

Hand tool bends component leads accurately
M-FS-308 B65-10181 02-05

PRINTER

Density trace made with computer printout
GSFC-322 B65-10200 02-01

PROTECTIVE CLOTHING

Double gloves reduce contamination of dry box atmosphere
LEWIS-211 B65-10117 02-03

PULSE

Pulsed plasma accelerator operates repetitively without complex controls
LANGLEY-48 B65-10062 02-01

Auxiliary circuit enables automatic monitoring of EKG'S
MSC-106 B65-10142 02-01

PULSE FREQUENCY MODULATION /PFM/

Simple circuit functions as frequency discriminator for PFM signals
GSFC-267 B65-10102 02-01

PULSE HEIGHT

Pulse height analyzer operates at high repetition rates, low power
WOO-046 B65-10041 02-01

PULSED GENERATOR

Pulse generator permits nondestructive testing of component breakdown voltage
MSC-122 B65-10054 02-01

Synchronized pulse generator needs no external power
GSFC-274 B65-10072 02-01

PYROLYSIS

Nitrogen dioxide produced by self-sustained pyrolysis of nitrous oxide
LANGLEY-32 B65-10074 02-05

PYROMETER

Nulling pyrometer uses Kerr cell shutter for fast responses
NU-0010 B65-10050 02-01

PYROMETRY

Rotating filters permit wide range of optical pyrometry
LANGLEY-33 B65-10100 02-02

R

RADAR EQUIPMENT

Circuit converts AM signals to FM for magnetic recording
GSFC-227 B65-10001 02-01

RADIANT ENERGY

Wide-angle sensor measures radiant heat energy in corrosive atmospheres
M-FS-228 B65-10019 02-05

RADIATION EFFECT

Irradiation improves properties of an aromatic polyester
LANGLEY-115 B65-10164 02-03

RADIATION FIELD

Fluid pressure used to test turbopump bearings
NU-0001 B65-10024 02-03

RADIATION SHIELDING

Refractory metal shielding /insulation/ increases operating range of induction furnace
LEWIS-202 B65-10188 02-02

RADIATION SOURCE

Multiple element soft X-ray source produces wide range of radiation
GSFC-286 B65-10082 02-02

RADIO FILTER

Helical coaxial-resonator makes excellent

RF filter
GSFC-243 B65-10012 02-01

RAY TRACING

Computer programs simplify optical system analysis
GSFC-306 B65-10093 02-01

RECEIVER

Tunnel-diode circuit features zero-level clipping
GSFC-241 B65-10002 02-01

Helical coaxial-resonator makes excellent

RF filter
GSFC-243 B65-10012 02-01

REDUNDANT SYSTEM

Logic redundancy improves digital system reliability
JPL-SC-069 B65-10025 02-01

REEL

Dispensing system eliminates torsion in deployed hoses
MSC-80 B65-10185 02-05

REFLECTOR

Optical arrangement increases useful light output of semiconductor diodes
JPL-SC-064 B65-10020 02-05

REFRACTORY MATERIAL

Refractory oxides evaluated for high-temperature use
LANGLEY-121 B65-10167 02-03

REFRACTORY METAL

Ceramic-coated boat is chemically inert, provides good heat transfer
LANGLEY-90 B65-10063 02-05

Apparatus facilitates pressure-testing of metal tubing
LEWIS-174 B65-10131 02-05

REFRIGERATION

New nut and sleeve improve flared connections
M-FS-194 B65-10180 02-05

REGULATOR

Zener diode is starter for transistor-regulated power supply
NU-0015 B65-10052 02-01

RELIABILITY

Circuit improvement produces monostable multivibrator with load-carrying capability
GSFC-34A B65-10011 02-01

REMOTE CONTROL

Knob linkage permits one-hand control of several operations
MSC-30 B65-10022 02-05

REPAIR

Inert gas spraying device aids in repair of hazardous systems
LEWIS-8B B65-10115 02-05

REPEATER

Pulsed plasma accelerator operates repetitively without complex controls
LANGLEY-48 B65-10062 02-01

RESIN

Compact assembly generates plastic foam, inflates flotation bag
LANGLEY-96 B65-10090 02-05

RESISTANCE

Adhesive for vacuum environments resists shock and vibration
MSC-56 B65-10016 02-03

RESISTOR

Microparticle impact sensor measures energy directly
GSFC-252 B65-10048 02-01

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RIGIDITY

Extendible column can be stowed on drum
JPL-686 B65-10191 02-05

RIVET

Jig and fixture aid fabrication of tungsten rivets
LEWIS-185 B65-10101 02-05

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Rock bit requires no flushing medium to maintain drilling speed
JPL-W00-031 B65-10109 02-05

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Metal bellows custom-fabricated from tubing
LEWIS-192 B65-10150 02-05

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Dispensing system eliminates torsion in deployed hoses
MSC-80 B65-10185 02-05

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Shock absorber protects motive components against overloads
W00-092 B65-10008 02-05

Pickup device reads pressures from ports in rotating mechanisms
LEWIS-158 B65-10021 02-05

ROTATING SHAFT

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MSC-32 B65-10155 02-05

ROTOR

Rotor position sensor switches currents in brushless Dc motors
GSFC-315 B65-10151 02-01

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SAMPLING DEVICE

Rock bit requires no flushing medium to maintain drilling speed
JPL-W00-031 B65-10109 02-05

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Apparatus permits flexure testing of specimens at cryogenic temperatures
M-FS-257 B65-10129 02-02

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LANGLEY-88 B65-10070 02-05

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M-FS-227 B65-10004 02-03

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MSC-125 B65-10030 02-01

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M-FS-210 B65-10014 02-05

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NU-0005 B65-10053 02-05

Low-cost seal compensates for surface irregularities
NU-0016 B65-10160 02-05

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Valve designed with elastic seat
JPL-442 B65-10040 02-05

SEISMOMETER

Seismic transducer measures small horizontal displacements
M-FS-81 B65-10029 02-05

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JPL-SC-064 B65-10020 02-05

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JPL-SC-066 B65-10007 02-05

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GSFC-237 B65-10017 02-05

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M-FS-228 B65-10019 02-05

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GSFC-252 B65-10048 02-01

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MSC-80 B65-10185 02-05

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M-FS-280 B65-10098 02-05

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M-FS-235 B65-10172 02-03

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JPL-591 B65-10023 02-01

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GSFC-49 B65-10176 02-05

SUSPENSION SYSTEM
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JPL-W00-021 B65-10175 02-03

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Simple circuit functions as frequency discriminator for PFM signals
GSFC-267 B65-10102 02-01

Variable frequency transistor inverters use multiple core transformers
GSFC-183 B65-10119 02-01

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GSFC-257 B65-10152 02-01

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M-FS-279 B65-10190 02-03

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JPL-638 B65-10061 02-01

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LEWIS-171 B65-10157 02-02

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GSFC-322 B65-10200 02-01

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ARC-27 B65-10089 02-01

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GSFC-320 B65-10173 02-03

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JPL-616 B65-10189 02-03

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LEWIS-136 B65-10149 02-05

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M-FS-25 B65-10057 02-01

TEST EQUIPMENT
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GSFC-227 B65-10001 02-01

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NU-0001 B65-10024 02-03

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M-FS-234 B65-10047 02-01

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JPL-675 B65-10128 02-01

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W00-125 B65-10182 02-01

Testing device subjects elastic materials to biaxial deformations
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Porous ceramic cures at moderate temperatures, is good heat insulator
GSFC-162 B65-10058 02-03

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GSFC-294 B65-10081 02-02

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Flexure support system protects thermally and dynamically loaded models
LANGLEY-39 B65-10042 02-05

Seal allows blind assembly and thermal expansion of components
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Cantilever springs maintain tension in thermally expanded wires
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THERMAL INSULATION

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is good heat insulator
GSFC-162 B65-10058 02-03

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Flexible curtain shields equipment from
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Refractory metal shielding /insulation/
increases operating range of induction furnace
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in various arrays
GSFC-339 B65-10199 02-01

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minimum space
GSFC-289 B65-10123 02-01

High permeability semiconductors permit
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GSFC-319 B65-10134 02-05

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discriminator for PFM signals
GSFC-267 B65-10102 02-01

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performing iterative division
M-FS-166 B65-10005 02-01

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JPL-W00-010 B65-10112 02-01

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MSC-102 B65-10060 02-05

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MSC-127 B65-10153 02-05

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Galvanic corrosion reduced in aluminum
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M-FS-272 B65-10140 02-03

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LEWIS-182 B65-10009 02-05

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wire puller
W00-108 B65-10031 02-05

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NU-0009 B65-10049 02-05

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connection time
ARC-40 B65-10094 02-05

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during installation
MSC-140 B65-10116 02-05

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MSC-100 B65-10168 02-05

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LEWIS-208 B65-10192 02-05

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FRC-21 B65-10198 02-05

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GSFC-249 B65-10103 02-01

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against overloads
W00-092 B65-10008 02-05

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gas-lubricated bearings
JPL-264 B65-10099 02-05

Bidirectional torque filter eliminates
backlash
GSFC-335 B65-10148 02-05

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inertia about three axes
GSFC-49 B65-10176 02-05

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Dispensing system eliminates torsion in
deployed hoses
MSC-80 B65-10185 02-05

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capability
JPL-591 B65-10023 02-01

Seismic transducer measures small horizontal
displacements
M-FS-81 B65-10029 02-05

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deployed hoses
MSC-80 B65-10185 02-05

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GSFC-183 B65-10119 02-01

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MSC-122 B65-10054 02-01

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GSFC-272 B65-10138 02-01

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MSC-95 B65-10010 02-01

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GSFC-228 B65-10028 02-01

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M-FS-279 B65-10190 02-03

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M-FS-171 B65-10035 02-05

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GSFC-292 B65-10165 02-01

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GSFC-299 B65-10127 02-01

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M-FS-194 B65-10180 02-05

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Dispensing system eliminates torsion in deployed hoses
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rivets
LEWIS-185 B65-10101 02-05

Tantalum cathode improves electron-beam evaporation of tantalum
JPL-WDD-021 B65-10175 02-03

TUNNEL DIODE
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GSFC-241 B65-10002 02-01

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NU-0001 B65-10024 02-03

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LANGLEY-34 B65-10195 02-01

UNMANNED SPACECRAFT
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GSFC-315 B65-10151 02-01

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GSFC-281 B65-10136 02-03

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GSFC-289 B65-10123 02-01

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JPL-304 B65-10036 02-02

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GSFC-231 B65-10171 02-02

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JPL-442 B65-10040 02-05

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JPL-WDD-021 B65-10175 02-03

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GSFC-281 B65-10136 02-03

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GSFC-287 B65-10096 02-01

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MSC-56 B65-10016 02-03

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VIBRATION DAMPING
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JPL-661 B65-10144 02-05

VIBRATION MEASUREMENT
Transducer senses displacements of panels subjected to vibration
ARC-37 B65-10085 02-01

VIBRATION PROTECTION
Improved holder protects crystal during high acceleration and impact
JPL-463 B65-10037 02-05

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M-FS-224 B65-10039 02-05

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Didymium compound improves nickel-cadmium cell
GSFC-295 B65-10083 02-03

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GSFC-228 B65-10028 02-01

Variable voltage supply uses zener diode as reference
GSFC-262 B65-10097 02-01

Variable load automatically tests dc power supplies
GSFC-291 B65-10105 02-01

Digital-output cardiometer measures rapid changes in heartbeat rate
MSC-133 B65-10143 02-01

Modular thermoelectric cell is easily packaged in various arrays
GSFC-339 B65-10199 02-01

VOLTAGE BREAKDOWN
Spherical electrode eliminates high-voltage breakdown
LEWIS-155 B65-10139 02-01

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VOLTMETER
Digital-output cardiometer measures rapid changes in heartbeat rate
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W

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GSFC-AE-21 B65-10124 02-01

WEAR
Improved fluid control valve extends diaphragm life
JPL-345 B65-10147 02-05

Dispensing system eliminates torsion in deployed hoses
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Force controlled solenoid drives microweld

tester
WOO-125 B65-10182 02-01

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M-FS-253 B65-10110 02-05

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Cantilever springs maintain tension in thermally expanded wires
LEWIS-136 B65-10149 02-05

Improved solderless connector is easily disconnected
JPL-SC-060 B65-10197 02-01

WIRE WINDING
Fiberglass parts cured during filament winding eliminates oven, saves time
M-FS-14 B65-10088 02-03

X

X-RAY
Multiple element soft X-ray source produces wide range of radiation
GSFC-286 B65-10082 02-02

X-RAY DIFFRACTION
Spherical model provides visual aid for cubic crystal study
LEWIS-108 B65-10065 02-03

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Magnets position X-ray film for weld inspection
M-FS-253 B65-10110 02-05

Y

YAGI ANTENNA
Modified interelement spacing improves Yagi antenna array
LANGLEY-130 B65-10183 02-01

Z

ZENER DIODE
Zener diode function generator requires no external reference voltage
JPL-33 B65-10013 02-01

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